Readability and Thematic Manipulation in Corporate Communications: A Multi-Disclosure and Trans-Tasman Investigation

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A Research Thesis submitted in partial fulfilment of the

requirements for the Degree

of Master of Commerce in Accounting

at the University of Canterbury

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The University of Canterbury

2011

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Acknowledgements

Firstly, I would like to thank my supervisors, Professor Chris van Staden and Associate Professor Richard Fisher, for their encouragement, guidance and support throughout this process. I am grateful for the ideas they provided and the time taken out of their busy schedules to read my drafts and make valuable suggestions for improvement.

To my family, thank you for your commitment to my success. Mum and Dad, you have been role models to me my whole life and I can never be grateful enough for the love, encouragement and support you have shown me. Without this, I would not be where I am today. Likewise, to my sister Kylie, thank you for your advice and encouragement to pursue my goals.

Last, but by no means least, I would like to thank my partner Jaimee and my friends for their support and patience, not only this year but also throughout my degree. Thank you for helping me through the tough times and showing me how to relax every now and then.

Abstract

The purpose of this study is to investigate the prevalence of two significant impression management strategies, thematic and reading ease manipulation, across a range of distinct corporate communications and explore the determinants of such practices.

While previous studies have examined thematic and reading ease manipulation, these have viewed such impression management techniques in isolation. This research is the first to simultaneously examine the prevalence of these impression management strategies across such a range of corporate communications. In particular, no previous studies have looked at the thematic and reading ease manipulation of standalone CSR reports or compared the various sections/disclosures included within the same annual report. Of significance are the inclusion of several additional themes, namely Activity; Optimism; Certainty; Realism and Commonality, advancing the scope of thematic manipulation research from the limited positive and negative themes.

It is important to examine a range of correspondence because no one form of correspondence is the same. Financial notes are heavily regulated and audited and thus should be less susceptible to manipulation. CSR disclosures have little to no regulation or audit process and as such are very susceptible to manipulation. Likewise, the two distinct reports service different audiences, who can be expected to have different expertise.

This research discovers what firm characteristics are determinates of the readability and thematic content in particular specific disclosure types, industries and country of listing. Financial performance tests reveal that there is evidence of manipulation of readability to obfuscate the disclosures of poor performing companies while the themes of these poorly performing company's disclosures closely mirror those that are performing well. In addition to the traditional performance based tests, a novel new test that combines the traditional thematic positivity variable and readability shows that positive disclosures are significantly more readable than negative ones, strengthening the obfuscation hypothesis. This research also motivates the need of a purpose built reading ease formula based on corporate disclosures that outputs a result that allows the comparison of disclosures. Indeed a very basic example of such a formula is developed as a starting point for additional research.

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1. Introduction

Corporate correspondence are categorised by prior research as either (1) the provision of useful incremental information, therefore aiding in decision making and overcoming information asymmetries; or (2) represent the opportunistic behaviour of managers, exploiting the existence of information asymmetries in order to engage in impression management (Merkl-Davies & Brennan, 2007).

Reading ease manipulation is as a proxy for obfuscation (see Courtis (1998) or Merkl-Davies & Brennan (2007)) whereby preparers can manipulate the complexity of written material, confusing readers and reducing the transparency of underlying circumstances. Pashalian and Crissy (1950), being one of the first papers to adopt readability formulae, showed how annual reports were effectively unreadable and useless as a communication document for investors. Since their pioneering work, almost every readability paper released to date has shown that little or no improvement has taken place with some suggesting disclosures are even deteriorating. Furthermore, scores suggest effective comprehension is beyond the vast majority of society.

Thematic manipulation studies suggest that management attempt to conceal bad news by either not disclosing it in narratives or by emphasising positive news in narratives. Based on this line of thought studies have shown that a Pollyanna principle exists within corporate correspondence, which states that:

> "Positive words occur more frequently than negative words in annual letters to stockholders regardless of the corporation's financial position". (Hildebrandt & Snyder, 1981, p. 10)

More in depth studies have shown that managers appear to be taking advantage of information asymmetries and use thematic tone setting (i.e. positive word use) to boost share prices artificially for personal gain (Abrahamson & Park, 1994).

The purpose of this study is to investigate the prevalence of these two significant impression management strategies, thematic and reading ease manipulation, across a range of distinct corporate communications and explore the determinants of such practices. While previous studies have examined thematic and reading ease manipulation, these have viewed such impression management techniques in isolation. This research is the first to test the

prevalence of these impression management strategies simultaneously and across such a range of corporate communications. In particular, no previous studies have looked at the thematic manipulation of standalone CSR communication and compared this to the various disclosures included in Annual Reports.

It is important to examine a range of correspondence because no one form of correspondence is the same. This research is the first to be able to compare CSR reports with annual reports (in regards to readability and thematic content) and go in-depth into the various sections annual report. To date, studies into the readability or thematic content of CSR reports have suffered from limited sample sizes or limited generalisability (being specific to a set industry). Part of the motivation for investigating CSR disclosures is the expansion of thematic research into this untested material; however, of more interest is investigating how these disclosures inherent differences, such as their levels of regulation, target audience and voluntary verses mandatory natures, effect the ultimate manipulation present within them. Including both thematic and reading ease research also provides some new relationships that can strengthen the typical evidence on obfuscation; for example, positive and negative themes are tested for relationships with readability.

This research provides additional evidence of the readability and thematic content of disclosures that strengthens previous findings whilst raising issues with others, suggesting additional research is warranted especially in the area of corporate readability evaluations. The addition of DICTION variables, Activity; Optimism; Certainty; Realism and Commonality provide a richer view of thematic use and its manipulation of corporate narratives. In particular, I identify significant differences in disclosures types and relationships within specific industries as well as evidence of obfuscation and thematic manipulation in the form of narrative mirroring.

The structure of the remainder of this thesis is as follows. Chapter 2 presents a background review of the significant literature surrounding impression management, readability investigations and thematic manipulation. Chapter 3 presents the research objectives and hypotheses. Chapter 4 presents the sample, and research method as well as introducing the various variables. Chapter 5 presents the results of my investigation. Chapter 6 discusses the results in terms and conclusion on hypotheses, discusses a possible advancement to readability research in corporate disclosures (new readability formulas) and lastly compares

my findings to previous research. Chapter 7 discusses the significance of my findings and their contribution while chapter 8 presents some of the significant limitations and assumptions used. The last chapter, chapter 8, suggests some future research extend on my research or address shortfalls in the literature, which is followed by the bibliography and appendices. At the very end of the thesis, an additional research chapter investigating readability and thematic content of disclosures split between New Zealand and Australia seeing as the countries listings were found to be a statistically significant difference.

2. Significant Prior Research

2.1 Corporate Disclosures: Roles and Issues

As a brief background, this subchapter discusses some of the key theories and ideas that establish the role of, and the ultimate issues of, corporate disclosures. Corporations typically provide correspondence or disclosures to two broad groups of stakeholders. The first group represents the public and customers of the corporation (both existing and potential). Correspondence to this group typically takes the form of product and or service information combined with additional information such as CSR disclosures. The second group of stakeholders represents the owners or investors of a company (which would include creditors) who typically would demand and therefore receive additional correspondence in the form of corporate financial disclosures (such as financial statements, financial notes, management discussion of performance and chairman letters).

To provide information to these two groups corporations issue either regulated or unregulated (i.e. voluntary) correspondence. Regulated correspondence includes annual reports and their financial statements, financial notes and some aspects of management discussion/analysis sections. In recent times, corporations have also been embracing the use of voluntarily disclosure with management forecasts, analysts' presentations, press releases, web pages and CSR reports (Healy & Palepu, 2001). Due to their voluntary nature, the format, content and quality of these documents is at the discretion of the corporation. This allows reporting entities to decide on what and how to report. Typically, these voluntary disclosures are found on company websites, in separate reports or integrated as part of annual reports (van der Laan, 2009).

The principle purpose of any disclosure is to provide information. In commerce, the provision of information is motivated as servicing key challenges and problems in our economy. Healy & Palepu (2001) discuss how a critical challenge facing every economy is arriving at an optimal allocation of investment resources. To this end, he suggests that there are two key issues:

> "First, entrepreneurs typically have better information than savers about the value of business investment opportunities and incentives to overstate their value. Savers, therefore, face an 'information problem' when they make investments in business ventures. Second, once savers have invested in their business ventures,

> entrepreneurs have an incentive to expropriate their savings, creating an 'agency problem'." (Healy & Palepu, 2001, p.407)

Guttentag (2007) acknowledges that information and agency problems are dominant motivating factors for disclosures, including these factors in his model whereby:

> "…firms may commit to disclose varying amounts of two types of firm-specific information, agency information and accuracy information, and in which a regulator may also mandate disclosures. These disclosures may, in turn, serve two purposes: reducing agency costs, and reducing information asymmetries between those inside and outside of the firm." (Guttentag, 2007, p.613)

Li (2008), citing Firtel (1999) as evidence, discusses how these two problems represent the key motivation behind correspondence and disclosures. He suggests that ever since the enacting of the *Securities Act (1933)* the U.S. Securities and Exchange Commission (SEC) has actively made efforts to encourage improvements to corporate documents. He comments that the fundamental motivation for the SEC's commitment to this cause is addressing two key weaknesses present in our current reporting framework. Firstly, reporting entities could use vague language and format in correspondence to hide adverse information (agency problems) and secondly, the average investor or user of these documents may not understand complex documents, which could result in capital market inefficiency (information problems).

Information problems exist due to information asymmetry and the conflicting incentives between managers of a company and the ultimate owners/investors of the company. Referring to Akerlof (1970), Healy and Palepu (2001) discuss how this problem can theoretically lead to the breakdown of the capital market:

> "…consider a situation where half the business ideas are ''good'' and the other half are ''bad''. Both investors and entrepreneurs are rational and value investments conditional on their own information. If investors cannot distinguish between the two types of business ideas, entrepreneurs with ''bad'' ideas will try to claim that their ideas are as valuable as the ''good'' ideas. Realizing this possibility, investors will value both good and bad ideas at an average level." (Healy & Palepu, 2001, p. 408, original emphasis)

Under the above scenario, the capital market will rationally undervalue some good ideas and overvalue some bad ideas thereby leading to inefficiencies in the capital markets. Healy and Palepu (2001) argue the need to avoid such a scenario is a significant motivating factor for

quality corporate disclosures that are accurate, reliable and ultimately useable by investors to allow truly rational and efficient decisions.

Agency problems arise due to the relationship whereby a principal (in this case the owners, investors and creditors of a corporation) delegates some decision making authority to another party, namely the agent (i.e. the board, directors and managers of the company). Under positive accounting theory, both parties in this relationship would act in their own self-interests. Owners and investors will naturally seek to maximise their own personal wealth; in conflict with managers of a company seeking to maximise their rewards from managing the company. Managers can achieve this by artificially manipulating stock prices and financial results to gain performance bonuses in the short term at the cost of later performance (see Healy & Palepu, 2001; Jensen & Meckling, 1976 and Smith & Warner, 1979). Abu Baker and Ameer (2011) suggest agency issues add to, if not cause, many of the information issues referred to previously.

> "As an agent of the owners of a firm, management may be motivated to disclose information that only conveys positive performance and conceal negative information that might harm the firm's performance. Consequently, information asymmetry can be seen to exist between management and the public." (Abu Bakar & Ameer, 2011, p.51)

To minimise the losses owners incur because of information and agency issues, monitoring costs such as audit costs and bonding costs arise. Bonding costs represent the production and distribution of financial reports and other documents that provide transparency and place constraints on any potential opportunistic behaviour agents can undertake (Gaffikin, 2008, pp.58-59; Hooghiemstra, 2000). Interestingly, Khlif and Souissi (2010) suggest that managers can actually reduce the risk of dismissal by communicating such information therefore implying that managers motivate disclosures as opposed to stakeholders. Taking a similar view point, Baginski et al. (2000) suggests additional disclosures from managers can actually reduce a firms cost of capital, thereby providing gains to shares which can lead to higher compensation should bonuses be tied to share performance.

Stakeholder theory also explains the expectations of high quality corporate correspondence. Under the stakeholder approach, the interactions of a corporation are not simply limited to shareholders, creditors and customers. Rather, there:

> "…are other stakeholder groups …who also have a right to be provided with information about how the activities of the company impact them. Thus, the dissatisfaction with mandatory disclosures and the demand for increased stakeholder reporting have led to initiatives in practically every part of the world, and have encouraged companies to improve stakeholder reporting." (Boesso & Kumar, 2007, p.270)

Under stakeholder theory, corporations find themselves having to respond to an ever increasing demographic who demand up-to-date information about every aspect of their activities.

Following a similar approach, legitimacy theory acknowledges the existence of users beyond typical owners/investors and considers society as a significant stakeholder to which corporations must account for.

> "Legitimacy theory posits that there is a social contract between a company and society that requires the company to be responsive to the environment in which it operates." (Boesso & Kumar, 2007, p.272)

Merkl-Davies & Brennan (2007) hypothesise that disclosures alter the perceptions of society regarding the ultimate legitimacy of the company and thus whether its continued operations should be supported or challenged. An organisation must continually seek to ensure that they operate within the bounds and norms of the societies in which they operate (van der Laan, 2009).

Despite the vital role disclosures play in our economy it is clear that the actual quality and content of currently produced disclosures fail to meet the standard required to ensure successful market operation. Recent corporate scandals such as ENRON, the 2008 failure of financial institutions and even Corporate Press highlight the issues present in disclosures.

2.2 Impression Management: A Brief Introduction

2.2.1 What is Impression Management?

Corporate correspondence and disclosures are categorised by prior research as either (1) the provision of useful incremental information, therefore aiding in decision making and overcoming information asymmetries; or (2) representing the opportunistic behaviour of managers, exploiting the existence of information asymmetries in order to engage in impression management (Merkl-Davies & Brennan, 2007). Hooghimstra (2000) defines impression management in his discussion as:

> "…a field of study within social psychology… concerned with studying how individuals present themselves to others in order to be perceived favourably by others." (Hooghiemstra, 2000, p.60)

In business it is expected that managers conduct their decision-making processes based on the best interests of the company's ultimate owners; the shareholders. However, due to information asymmetry, management can take actions to maximise their own utility by being better informed about the company's true performance. Asymmetries in information result in adverse selection and moral hazard problems on the part of management (Beaver, 1998). Impression management is one manifestation of this agency issue (García Osma & Guillamón-Saorín, In Press, Corrected Proof).

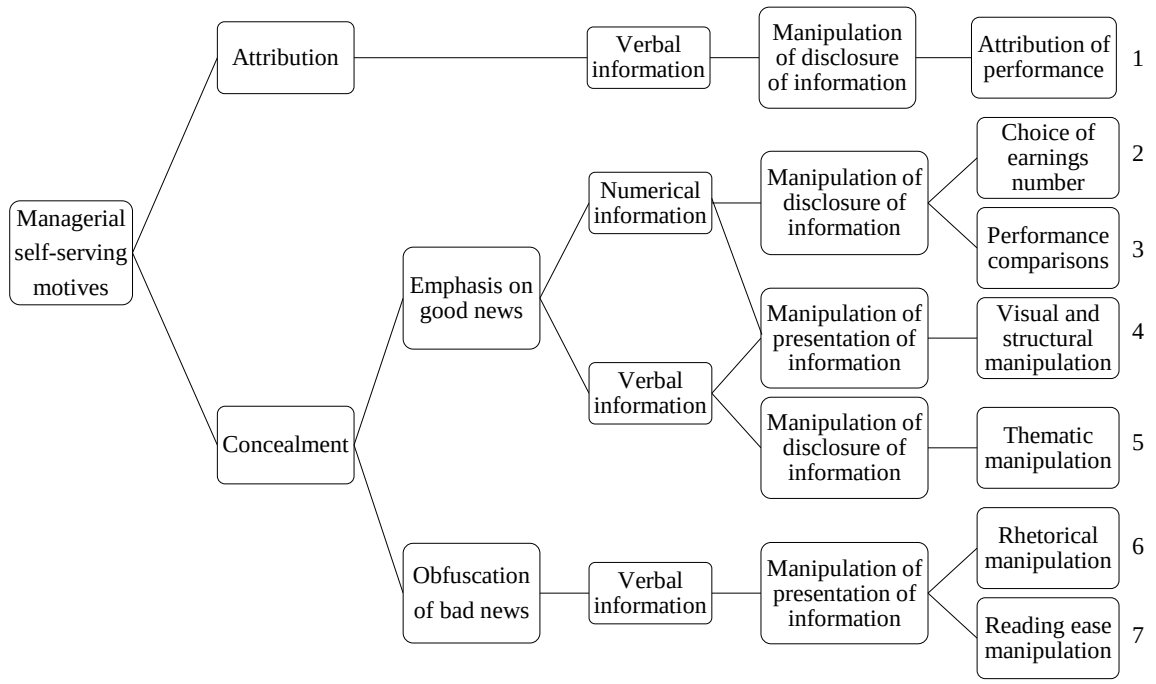
> "Managers are assumed to act rationally to maximise their utility by exploiting information asymmetries to mislead investors about financial performance and prospects. This manifests itself in reporting bias, i.e. the emphasis of positive organisational outcomes and the obfuscation of negative organisational outcomes in corporate narrative documents." (Merkl-Davies et al., 2011, p.316)

Impression management research relies on the failure of economies to obtain perfect market efficiency. Instead, economies only achieve a weak form of market efficiency whereby investors or users of disclosures are unable to assess managerial bias or manipulations in the short term. As a result of this weak form and agency issues it is assumed that managers engage in impression management in order to manage perceptions and influence share prices, thereby increasing mangers compensation (via share options and bonuses) and leading to misallocation of market resources (Merkl-Davies & Brennan, 2007).

2.2.2 Impression Management Research Strategies

Merkl-Davies and Brennan (2007) suggest that there are two chief impression management strategies management use in narrative documents; namely attribution and concealment. As adapted from their research, figure 2 on the following page shows these two strategies and how they are investigated at a theoretical level, whereby providing seven research approaches.

Figure 1: Managerial Impression Management Strategies



Adapted from Merkl-Davies and Brennan (2007)

This research is concerned with strategies 5 and 7. Strategy 7 focuses on the manipulation of reading difficulty by analysing the syntactical features of narratives; I discuss this further in chapter 2.3. Strategy 5 focuses on the manipulation or bias of themes within narratives. Historically this has involved the analyses of positive and negative keyword occurrences. I discuss studies on this strategy in chapter 2.4.

2.3 Readability and Readability Formulas

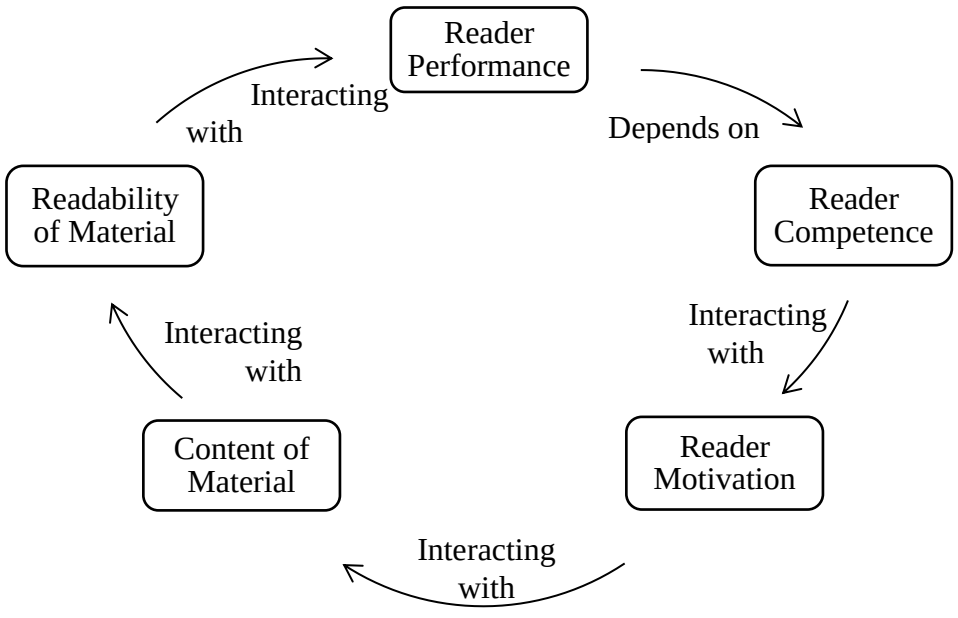
2.3.1 Readability vs. Understanding

It is prudent that I introduce readability and discuss what it represents within this research before I introduce studies that test readability. Dale and Chall (1948), in presenting the Dale-Chall readability formula, suggested readability is:

> "…the sum total (including the interactions) of all those elements within a given piece of printed material that affect the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimum speed, and find it interesting." (Dale & Chall, 1948, p. 13)

Leong et al. (2002) suggest that the level at which a reader performs with written material (their understanding) involves two individual entities, the 'text' and the 'reader'; and the interactions between these. An enlightening model for viewing the reading experience based on this twin entity approach is included as figure 2.

Figure 2: Model of Reader Performance



Adapted from Klare (1980) and Leong et al. (2002)

Originally developed by Klare (1980), this model shows the elements and relationships that impact on a reader's final performance. It suggests the ultimate performance of the reader (how well they comprehend the written material) depends on a chain of elements. This chain consists of the competence of the reader (their reading skill) interacting with the readers

motivation (their interest in and active attention to the written material), interacting with the content of the material (how difficult and interesting the content is), interacting with the readability of the material (the ease of reading).

For this research and those I introduce below, I must differentiate between the understandability of material and the ultimate readability of that material. Utilising the model presented in figure 2, the concept of understandability is reader orientated represented by 'reader performance'. Readability, however, is purely text orientated and is concerned with the way text is written and presented (i.e. the 'readability of the material') which then influences the reader's ultimate performance and thus the reader's ultimate understanding of the material. It is this element of the reading experience that I am concerned with in this research and, likewise, is the interest of the majority of papers discussed in subsequent chapters.

2.3.2 Measuring Readability

Many factors have been put forward for consideration when analysing written material for its readability. Chavkin (1997) noted that the two sturdiest and most common elements are vocabulary difficulty and sentence length.

> "…readability formulas determine the readability level of a passage by examining word difficulty and sentence length" (Stevens et al., 1992, p. 1).

By measuring factors such as sentence length, use of long words and the incidence of 'hard' words, a readability score can be produced and, like any other quantitative variable, can be easily evaluated.

Syntactical research has provided many readability formulae that claim to assess the readability of written material; however, several fundamental formulae and methods have gained favour with both academics and critics alike. These include the Flesch formula (Flesch, 1948), the Dale-Chall formula (Dale & Chall, 1948), and the Fog formula (Gunning, 1952). It is contended that readability formulas have grown in popularity because, unlike comprehension techniques such as the Cloze procedure (see Stevens et al., 1992), no reader participation or assumptions therein are required for valid conclusions to be drawn. This lessens threats posed by incorrect sampling techniques, qualitative interpretation and testing while making replication of experiments and large-scale investigations easy (Subramanian et al., 1993). Below I provide a brief overview of the popular readability formulae I intend on using.

The Flesch formula (sometimes referred to as the Flesch Reading Ease formula) assesses the number of words, syllables and sentences in a passage. The formula (presented as equation 1) outputs scores between 0 and 100 where the lower the number, the more difficult the material.

Equation 1: Flesch Reading Ease Formula

$$Flesch = 206.835 - 1.015\left(\frac{total\ words}{total\ sentences}\right) - 84.6\left(\frac{total\ syllables}{total\ words}\right)$$

A general conversion of Flesch scores to grade levels is included as figure 3 on the following page.

Figure 3: Flesch Score to Grade Level Conversion

100 – 90 = 5th Grade	90 – 80 = 6th Grade
80 – 70 = 7th Grade	70 – 60 = 8th – 9th Grade
60 – 50 = 10th – 12th Grade	50 - 30 = Under Grad (University)

30 - 0 = Post Grad (University)

The Flesch-Kincaid formula (sometimes referred to as the Flesch Grade Level formula) is most reliable when used to assess upper elementary and secondary materials (Mirco Power & Light Co, 2009). Similar to the Flesch formula, it assesses the number of words, syllables and sentences but outputs its result as a grade level. The formula is shown below as equation 2.

Equation 2: Flesch-Kincaid Formula

$$Flesch\ Kincaid = 0.39\left(\frac{total\ words}{total\ sentences}\right) + 11.8\left(\frac{total\ syllables}{total\ words}\right) - 15.59$$

The Fog formula assesses the total number of words, words with three or more syllables, and number of sentences. Its design incorporates a 90% comprehension target (sometimes referred to as the 'criterion score'); this represents the required percentage of correct answers on a test assessing the material (Mirco Power & Light Co, 2009). For example, the Fog formula being based on 90% comprehension predicts the reading grade level normally required to correctly answer 90% of questions covering the material. Micro Power and Light Co (2009) suggest that no technical material should score higher than 14, no business material higher than 12, and no clerical material higher than 8. The formula is shown below as equation 3 with complex words representing words with three or more syllables and the output being the minimum required US grade level required for effective readability.

Equation 3: Fog Formula

$$FOG = 0.4\left(\left(\frac{total\ words}{total\ sentences}\right) + 100\left(\frac{complex\ words}{total\ words}\right)\right)$$

Similar to the Fog formula, the Smog formula assesses the number of sentences and the number of words containing three or more syllables. Whereas most formulas predict the grade level necessary for less than complete comprehension, Smog targets 100% comprehension (Mirco Power & Light Co, 2009). For this reason, Smog is frequently referred to as the 'gold' standard. The Smog formula is shown below as equation 4.

Equation 4: Smog Formula

$$SMOG = 1.043\sqrt{30 \times \frac{number\ of\ polysyllables}{number\ of\ sentences}} + 3.1291$$

2.3.3 Readability of Corporate Disclosures

Corporate disclosures serve a vital role in the successful operation of our capital markets and indeed the economy as a whole. Readability has historically been a common line of inquiry when assessing the ultimate usefulness of these disclosures, where readability is a measure of the ease by which a user can read any given passage of written material. Research has also investigated the manipulation of reading ease as a means of impression management with the intention to obfuscate bad news. Below I reflect on some key papers that have investigated reading ease from 1950 to today.

One of the first papers to investigate the readability of corporate correspondence analysed annual reports utilising the Flesch formula just two years after the methods initial release. Investigating the readability of corporate annual reports, Pashalian and Crissy (1950) revealed that the general reading level was beyond the comprehension of 75% of the US adults. Twenty years later, Worthington (1978) applied the Dale-Chall readability formula to a sample of the second largest 500 industrial corporations based on 1974 Fortune's ranking. He found financial disclosures readability ranged from difficult to very difficult. Adelberg (1979) using a sample of 16 United States (US) firms footnotes, management's reviews and auditor's reports found poor readability to be present in footnotes and management's review sections. Furthermore, he found profitability inversely related to the reading difficulty of the auditor's reports and footnotes. Schroeder and Gibson (1990) provide a nice overview of these early papers (1950 through to 1980) for anyone seeking more information on these. Their literature review paper concluded that financial documents had poor readability, which they backed up with their own basic tests.

Thirty-six years after the pioneering Pashalian and Crissy research, Courtis (1986) utilised the Flesch formula but added the Fog formula to his analysis. Investigating the reading ease of 142 Canadian annual reports, his data supported the conclusion that readability of these reports was between difficult to very difficult. He suggested the financial footnotes, being the poorest scoring section, were beyond the comprehension of 92% of the Canadian population based on census statistics. However, his results showed no significant relationship between poor readability and poor firm performance or high corporate risk. Jones (1988), using a longitudinal case study, investigated the chairman's report measuring the Flesch reading ease. He found readability declined with increasing firm size and complexity (using turnover as a proxy) but suggests that only further research using larger samples could lead to any

definitive conclusions. Testing for what had been an unconsidered relationship, Smith and Taffler (1992) tested for a link between the readability of chairman's reports and firm's corporate survival. Using a sample of 66 UK companies, they found a significant difference in the readability of failed firm's reports and the reports of firms that did not fail.

> "Such is the extent of the relationship that readability alone provides a significant means of successfully classifying failed and non-failed companies. The inference is that firms are actively signalling positive performance while attempting to obscure messages which convey poor performance, actions consistent with the suggestions of both agency and signalling theories." (Smith & Taffler, 1992, p.86)

Subramanian et al. (1993) investigated the readability of 60 US companies split between profitable and unprofitable. Using readability outputs from the computer program RightWriter, they found the readability of well preforming companies (profit increases over previous year) were more readable than those who performed badly (profit decreased over previous year). Courtis (1995) investigated 32 Hong Kong public companies between 1986 and 1991. Testing chairmen's address and footnote passages from the annual reports with the Flesch, Fog and Lix readability formulas he found that the disclosures' readability was beyond the fluent comprehension levels of 90% of the adult population. Further, the readability declined over the five-year period whilst company size, industry and profitability were not associated with improved readability levels. More recently, Clatworthy and Jones (2001) investigated 120 chairman's reports testing for a relationship between Flesch scores and firm performance. Their findings suggested that the variability of readability was unrelated to performance. Rather, the key driver of readability was the thematic structure of the report.

Li (2008) examines annual report readability and its relationship with firm performance and earnings persistence. Utilising a sample of companies' 10-K filings from 1994-2004 (being 55,719 firm years) he found that the annual reports of firms with lower earnings were harder to read.

> "Overall, the annual reports of public companies are very difficult to read. The mean and median Fog Index of the whole annual report are 19.4 and 19.2 respectively, which are 'unreadable' according to the usual interpretation of the index" (Li, 2008, p.234).

In addition, Li (2008) found evidence that managers were opportunistically choosing the readability of annual reports to hide adverse information from investors.

In an attempt to assess progress towards improved readability, Dempsey et al. (2010) investigated Real Estate Investment Trusts for on-going trends. They showed how the readability of 183 annual reports had extensive deterioration over the length of their study; finding that the average readability had decreased from a required grade level of 12 (high school senior) in 2002 to 17 (university postgraduate student) in 2007. Also looking for a change in readability with time, Richards and van Staden (2011) investigated the readability of NZX50 constituent companies' financial footnotes to assess what impact the adoption of New Zealand International Financial Reporting Standards (NZIFRSs) had on their readability. They found adoption of NZIFRSs had deteriorated the readability of disclosures, which were generally very poor with scores suggesting that 93% of the New Zealand population would not be able to effectively read and comprehend them.

While many papers have investigated the readability of annual reports, shareholder letters and the like, little attention has been given to CSR reports; an area that has seen massive corporate uptake in recent years. Abu Bakar and Ameer (2011) is the only readability investigation to date to examine the readability of CSR communication. With a sample of Malaysian listed companies and employing Microsoft Word's Flesch calculation capabilities, they found readability to vary from very difficult to fairly difficult. Furthermore, they found a relationship between the readability of the CSR communication and companies' financial performance. Later testing implied that the management of poorly performing companies deliberately choose difficult language in CSR communication as expected under the obfuscation hypothesis.

2.4 Thematic Analysis and Manipulation

2.4.1 Background to Thematic Analysis

According to the Oxford English Dictionary, thematic (in the field of linguistics) is "…pertaining to, or designating the theme of a sentence". Therefore, it follows that thematic analysis "focuses on identifiable themes and patterns of living and/or behaviour" (Aronson, 1994, p.1). Braun and Clarke (2006) discuss how thematic analysis can take part on two levels; on a semantic/explicit level, or at a latent/interpretative level. On a semantic/explicit level, researchers identify themes within the explicit or surface meanings of data with no regard for anything beyond what was explicitly said or written. In contrast, at the latent/ interpretative level researchers go beyond the semantic content of the data and start to identify and examine the underlying ideas, assumptions, conceptualisations and ideologies that are theorised as shaping or informing the semantic content of the data (Braun & Clarke, 2006).

> "If we imagine our data three-dimensionally as an uneven blob of jelly, the semantic approach would seek to describe the surface of the jelly, its form and meaning, while the latent approach would seek identify the features that gave it that particular form and meaning." (Braun & Clarke, 2006, p.84)

Research using thematic analysis techniques is commonplace in linguistics and psychology disciplines, however, it is also present in many accounting and business based studies where researchers focus on its application to impression management. Most studies within the business literature have limited the scope of thematic analysis, typically evaluating just the incidence of positive and negative themes within narratives. Such studies suggest that management attempt to conceal bad news by either simply not disclosing it in narratives or by obscuring it in positive news.

2.4.2 Thematic Research in Business Studies

Hildebrandt and Snyder (1981) represent one of the first papers to consider thematic manipulation in accounting. Their study extended research from communication studies to inquire whether 'the Pollyanna principle' applied to corporate annual report letters. Their results discovered that it did indeed apply, with positive words occurring more frequently than negative words irrespective of the company's financial position (Hildebrandt & Snyder, 1981, p. 10).

To help illustrate the potential for thematic manipulation, figure 4, as adapted from Henry (2008), shows how thematic manipulation (limited to just the manipulation of positive/negative themes) could take place based on using a simplified income statement. All four narrative statements about the financial data are factually correct, however, they convey different impressions regarding performance in 2011. Statement 'a' fails to disclose any negative results, 'b' shows no bias providing a true and fair disclosure of performance, 'c' is negatively weighted using the word decreased and disclosing just the unfavourable data, with 'd' emphasising just the positive outcomes while completely ignoring any negative elements.

Figure 4: Thematic Manipulation Example

	2010	*2011*	*Change (%)*
Sales ($)	1000	950	-5.0
Expenses ($)	800	740	-7.5
Net Income ($)	200	210	+5.0
Return on Sales (%)	20.0	22.1	+10.5

a) In 2011, sales totalled $950, and net income was $210.
b) In 2011, sales and net income were $950 and $210, respectively, compared to $1000 and $200 for 2010.
c) In 2011, sales decreased by 5%.
d) In 2011, net income increased by 5%. In addition, profitability improved with return on sales increasing 10.5% and currently sits at over 22%.

Adapted from Henry (2008)

Since the early work of Hildebrandt and Snyder (1981), many papers have adopted their analysis method. Rutherford (2005), in investigating the occurrence of 90 keywords within 44 UK operating and financial review narratives, showed how language was clearly biased towards a positive theme, as expected by the Pollyanna principle. Similarly, Guillamon-Saorin (2006) found evidence of a positive bias in 172 UK and Spanish press release narratives even after controlling for performance. Abrahamson and Park (1994) and

Abrahamson and Amir (1996) provide further evidence of the Pollyanna principle however their results are limited to just the incidence of negative keywords/themes. Both papers find that high use of negativity was associated with poor performance both in the year of the report and as a predictor of future performance.

In addition to showing the existence of the Pollyanna principle in business narratives, the literature has shown that the thematic content of corporate communications has some powerful relationships with specific events or firm characteristics. Abrahamson and Park (1994) was able to establish that preparers with a high proportion of external directors, directors with accounting backgrounds and even preparers with large institutional investors adopted greater use of "word[s] that might denote negative organizational outcome[s]" (Abrahamson & Park, 1994, p.1314); that is to say, these elements appeared to restrain the concealment of negative outcomes. However, they noted that small institutional investors and external directors with relatively large shareholdings resulted in greater concealment of negative outcomes. Smith and Taffler (2000) looked for a relationship between thematic manipulation in chairman's reports and corporate failure. Utilising both word and theme based counts such as the presence of the words overdraft, loans, as well as phrases such as bank support, no dividend, chairman resigns, etcetera they were able to construct two prediction models, both capable of greater than 90% correct classification of failure.

Other studies have even shown that management is actively engaging in thematic manipulation for personal benefit. Abrahamson and Park (1994), as part of their analysis, looked at patterns in directors' subsequent share sales after engaging in thematic manipulation. They showed that low disclosure was associated with subsequent selling of stock by top officers and outside directors, suggesting that the observed reductions in negativity were deliberate. This finding supported the earlier work of Staw et al. (1983), who discovered self-serving attributions in organizational communications.

If managers are actively engaging in thematic manipulation then the natural question is whether this is actually effective at manipulating investors. Unfortunately, the literature is inconclusive in this regard. Francis et al. (1994) found that announcement-day market returns were not associated with the tone of press coverage in the year prior to an adverse earnings announcement. In contrast, Lang & Lundholm (2000), using a matched pair sample of 82 companies, found a positive correlation between market returns and the frequency of

optimistic statements made by companies in the 18 months prior to announcing a seasoned common stock offering (regarded as an adverse announcement as it would dilute current stock). Likewise Henry (2008), using 441 US press releases, showed that tone influences investors' reactions. Where tone is:

> "…a function of both content and word choice. A more positive tone can be achieved by focusing on positive outcomes and/or by describing outcomes in a positive way." (Henry, 2008, p.377)

Offering an explanation based on prospect theory, the results also suggested that longer press releases reduce the market impact of unexpected earnings.

2.4.3 Advancing Thematic Research: DICTION

Recognising the limited scope thematic manipulation studies have investigated, Sydserff and Weetman (2002) suggest the application of DICTION analysis to impression management research. Classifying its analysis capabilities as a form-oriented[1] thematic analysis technique, they motivate its use as an important research path given the increasing importance of issues associated with impression management in accounting narratives. They comment:

> "As a form-oriented approach, DICTION offers considerable potential for the accounting researcher. It is simple to use, it is automated, and yet it embraces a considerable degree of sophistication. The dictionaries have been constructed by experts in linguistics. With a total word corpus in excess of 10,000, DICTION is considerably more comprehensive than existing form-oriented approaches in the accounting literature." (Sydserff & Weetman, 2002, p.533)

As disclosed on their website, DICTION 6.0 (being the latest version) is a scientific tool for determining the tone of a verbal message by searching a passage for five master features (Hart & Carroll, 2011). DICTION's five master variables, namely Activity, Optimism, Certainty, Realism and Commonality are composed of thirty-one individual dictionary counts and four calculated variables; combining them via addition and subtraction and then adding a constant of 50 to eliminate any negative numbers (Digitext Inc., 2011). The software then provides the raw counts and offers a standardising feature than identifies outliers in the results based on several sets of previous research. More details on these variables are included in chapter 3.3.

One of the first accounting applications of DICTION analysis is Ober et al. (1999). Applying the certainty variable to 72 Fortune 500 companies, they show that the use of certainty in public business communications is not influenced by either profitability or industry. However, a significant difference exists between oral and written communications. Finding that oral communications were more upbeat than written communications "…with most managers opting to use overstatement as a way to express their confidence in their company's prospects" (Ober et al., 1999). Yuthas et al. (2002) also uses DICTION 5.0. While limited to analysis of seven US matched pairs their results suggest that companies expecting earnings surprises

[1] Form-oriented analysis typically relies on some form of objective, computerised analysis of narratives based on a compendium or taxonomy of keywords (Sydserff & Weetman, 2002).

(either good or bad) exhibited higher levels of communicative action. Their findings suggested that companies anticipating large earnings surprises used the narrative sections of annual reports to communicate information about managements' veracity and trustworthiness as well as the company's financial position.

Providing the most robust application of DICTION in accounting, Sydserff and Weetman (2002) provide an empirical application to help illustrate where future research can use its analysis. Using both chairman's statements and manager's reports of 26 investment trusts they tested for a significant difference in all of DICTION's master variables between 'good performers' and 'poor performers'. Significant differences were found in the optimism scores of chairman statements and the activity score of manager reports. However, they comment that the lack of any significant difference in most of the master variables could indicate that the managers of the poor performers were using impression management to make their narratives resemble the verbal tone and themes of the good performers, especially in the case of the variables certainty, optimism and activity (Sydserff & Weetman, 2002, p.539).

3. Research Questions and Hypotheses

3.1 Research Questions

The purpose of this study is to investigate the prevalence of two significant impression management strategies, thematic and reading ease manipulation, across a range of distinct corporate communications and explore the determinants of such practices. This can be split down into five basic questions as represented below.

RQ1: What is the thematic content and readability levels of CSR and annual reports?

RQ2: What are the determinants of thematic content and readability in CSR and annual reports?

RQ3: Is there evidence that readability levels and thematic content is manipulated within CSR and annual reports?

RQ4: What is the difference in the thematic content and readability of different correspondence types?

3.2 Hypotheses

The first research question does not have a specific hypothesis to test; rather I will seek to answer it within the initial analysis of the readability and thematic results. Hypothesis 1 is based on the second research question, testing the determinants identified in previous research, as well as some additional ones.

H1a $_{\text{Alternative}}$: [Variable] is [Direction] related to the readability of disclosures.

H1b $_{\text{Alternative}}$: [Variable] is related to the thematic content of disclosures.

Table 1: Hypothesis 1 Independent Variables

Variable	Direction
Size	Negatively
Leverage/Solvency	Unknown
Industry	Unknown
Disclosure Type	Unknown
Country	Unknown

Where the direction is unknown the hypothesis is testing for any relationship (i.e. direction is blank).
Profitability is tested by hypothesis 2 below.

When testing if readability levels and thematic content is manipulated, agency theory suggests a relationship should exist between readability of thematic content and profitability. This is due to the opportunistic behaviour of management hiding poor performance in complicated disclosures or as Sydserff and Weetman (2002) comment managers of the poor performers using impression management to make their narratives resemble the verbal tone and themes of the good performers. Interestingly Abrahamson and Amir (1996) suggests managers could attempt to overcome information asymmetries by providing useful incremental information about future earnings prospects within current disclosures and as such there could be a relationship between future profitability and readability or thematic content. Unlike a relationship with current performance which would suggest manipulation, this would suggest there is no manipulation (depending on the circumstances and the relationship). Following the expectations of agency theory and most manipulation based research my first hypothesis for testing is:

H2a $_{\text{Alternative}}$: Profitable companies have disclosures that are more readable.

H2b $_{\text{Alternative}}$: The thematic content of company's disclosures is not related to the company's profitability.

In addition to this typical manipulation hypotheses, this research can test a brand new form of manipulation hypothesis that makes use of both thematic and readability elements. This hypothesis tests whether the number of positive or negative keywords in a disclosure is related to the readability of a disclosure. If manipulation is present then disclosures that have poor readability would typically be more negative in nature, meanwhile disclosure that are more readable would be more positive in nature.

H2c $_{\text{Alternative}}$: Disclosures with higher readability are more positive than disclosures with poor readability.

Hypothesis 3 is based on question 4. This hypothesis assumes that different documents seek to serve different purposes (i.e. annual reports are financially focused while CSR reports are focused on social, environmental and economic elements). Alternatively, some disclosures are regulated and audited while others have no regulations or audit process. Hypotheses 1a and 1b test for differences in disclosures using the independent variable 'disclosure type. In addition to this general test hypothesis 3 tests whether regulation or audit procedures limits readability manipulation. As regulations and audit processes are designed to limit the

opportunistic behaviour of management, disclosures subject to them such as financial notes or directors discussion and analysis sections of annual reports should exhibit less manipulation and have improved readability compared to the unregulated CSR disclosures or opening letters.

H3a $_{Alternative}$: Regulated disclosures are more readable than unregulated disclosures.

The final hypothesis explores whether there is any difference in the thematic content or readability of CSR reports and annual reports. It is expected that these documents would have different readability levels and thematic content as they serve different purposes and are made for different audiences. For example it is expected that CSR based disclosures would be more readable than other types as they are written for a more generalised audience compared to financial report notes that a typically made for highly educated investors or analysts.

H4a $_{Alternative}$: There is statistically significant differences in the readability of CSR reports and annual reports.

H4b $_{Alternative}$: There is statistically significant differences in the thematic content of CSR reports and annual reports.

4. Method

4.1 Sample

Countries

New Zealand is the home country of this research and as such, the use of impression management techniques within it is of high interest to the researcher. Australia is included as it represents New Zealand's closest economic partner and there is a lot of discussion about these countries sharing closer economic ties in the future. However, this is not the only reason for selection of these two countries; the primary reason being the limited attention they have received by impression management studies to date, with most based on samples from either the United States or the United Kingdom. There is a number of reasons why different results could be expected in these countries, principally the smaller scale of company's operations as well as less competition being much smaller capital markets.

To investigate correspondence in these two countries, a sample is taken from each country's stock exchange. In New Zealand the sample is based on NZX 50 constituent companies with the ASX 100 constituent companies used for the Australian sample. In order to maximise the sample pool of disclosures, investigation takes place in reports over 2008 and 2009. However, recognising that standalone CSR reports are often not released annually, data will be obtained from each company's latest two reports (if any exist at all). These sample parameters result in an initial sample size of 150 companies, 300 annual reports and an estimated 60 CSR reports (details on the final company representation and the number of disclosure can be found in chapter 5).

Disclosures/Correspondence

This study utilises disclosures extracted from two forms of corporate correspondence, namely standalone CSR reports and annual reports which were collected from the Morningstar Document Research database. Standalone CSR reports are separated into two sub-sections: the opening letters and the main disclosure sections. Annual reports are separated into four sub-sections: the chairman's letter, any dedicated CSR sections, management discussion/analysis sections and finally the financial statement notes.

4.2 Disclosures Preparation and testing

This section provides a brief overview of the data preparation process that is completed before any testing and how the testing was ultimately preformed. The approach is computerised as much as possible, allowing a large number of disclosures to be tested within the period of a Masters dissertation and with just one researcher. The benefits of a computerised data preparation and testing process far outweigh the costs in the case of this Masters research, which simply would not be possible otherwise.

A completely computerised can cause several potential issues. When converting disclosures to testable text, errors can arise that un-checked and fixed can result in inaccurate results. Likewise, the research becomes very dependent on the quality of the programs used where some programs may say they do some task or calculate some variable they may not do this correctly or as you would expect. To combat some of the issues with typical computerised process I developed my own customised process outlined below. This process was developed with researcher test stages and reviews to ensure data integrity and accurate results. An example of the final output of the computerised cleaning process is included in the appendices. Appendix 9 shows a PDF extract from Fortescue's annual report discussion section; appendix 10 shows the result of all the cleaning prep work done by conversion programme and the Macros discussed below. This document would then be ready for testing.

4.2.1 Disclosure Preparation and Cleaning Process

Individual PDF reports are manually reviewed with the page ranges of each relevant disclosure section recorded. Once this data is collected, Aiseesoft PDF Converter Ultimate is used to convert the page ranges into individual text files (in this research there was 824 of these created). Unfortunately, some PDF's are scanned images as opposed to text, and as a result, the program failed to convert them accurately. In situations like these, they are excluded from the analysis. These newly created text files then require cleaning up before any tests could be applied.

The first cleaning stage involves the importing of these documents into Word 2010. Once imported, the documents were manually scanned for errors from the conversion process. When errors were discovered, a Macrocode was written that looked up the entire document for repeats of this error and repaired all occurrences. For example, the conversion program

had difficulty accurately converting the letters “fl” in some PDF’s, instead converting them as “?”. So the word “flow” was sometimes converted as “?ow” or the word “flip” was converted as “?ip”; a Macro searched for these errors and replaced “?ow” with “flow” and “?ip” with “flip. After conducting this process on a small proportion of the documents a complete Macro had been constructed that was able to identify all the errors the conversion program made and could quickly search a document and repair them resulting in almost no researcher interaction. This Macro reduced the time required to clean documents immensely and is included as appendix 7.

The second cleaning stage uses another Macro to clean up the formatting of documents; removing any paragraph breaks, line breaks, digits, unnecessary characters (such as $, percentage, hyphens etcetera), brackets, double-ups of white space and reformats tables to just their text components. Once the formatting was cleaned this Macro would create a clean running narrative by inserting a line break after every sentence; allowing the readability programme to run efficiently. Once again this Macro is included at the end of this dissertation as appendix 8.

As a final cleaning step, the text files were then run through Micro Power and Light’s Readability Prep programme. The programmers of Readability Calculations created this software to clean files before having their readability tested. It deletes sentences of less than three characters, sentences with no keyboard characters, and sentences with no (hard) end punctuation such as headings. In addition, it changes web address to "websiteaddress", changes email address to "emailaddress", changes words over 36 characters to "verylongword" and finally omits all list entry designations. This is done to ensure the calculation programs can run correctly and provide accurate scores from the now ‘clean’ texts.

4.3 Construct of Measures

4.3.1 Readability

As discussed in chapter 2.3, syntactical research has provided many readability formulae that claim to assess the readability of written material; however, several fundamental formulae and methods have gained favour with both academics and critics alike. These include the Flesch formula (Flesch, 1948), the Dale-Chall formula (Dale & Chall, 1948), and the Fog formula (Gunning, 1952). It is contended that readability formulas have grown in popularity because, unlike comprehension techniques such as the Cloze procedure (see Stevens et al., 1992), no reader participation or assumptions therein are required for valid conclusions to be drawn. This lessens threats posed by incorrect sampling techniques, qualitative interpretation and testing while making replication of experiments and large-scale investigations easy (Subramanian et al., 1993). However, one significant limitation is referred to in discussions around their validity; namely whether the formulae measure what they are intended to measure (Mailloux et al., 1995; Leong et al., 2002). These criticisms argue that readability formulae tend to ignore other variables such as readers motivation (see chapter 2.3.1, figure 2) or the layout of text and the legibility of material. Woods et al. (1998) comments "It is certainly true that a positive readability score does not guarantee that a piece of text can in fact be successfully read." (Woods et al., 1998, p.51).

Regardless, studies have shown that when used correctly, readability formulae are powerful tools. Klare (1984) reviewed multiple prior studies that investigated readability formulae and found that readability scores obtained from these formulae were related to the probability of readers actually reading a piece of text completely, the amount of information remembered by readers, the length of time taken to read a document, and the reader's personal ratings of reading difficulty. Additional support can be found in Woods et al. (1998) who comment:

> "The purposes of using readability tests in interpretation are to ensure the language style is not too difficult for the average visitor, and to assist in avoiding unnecessary scientific jargon." (Woods et al., 1998, p.51)

They go further and suggest such formulae are developed as:

> "…an 'objective' measure against writing complexity, and to estimate the reading or education level required for comprehension of the text." (Woods et al., 1998, p.51)

Leong et al. (2002) conclude in their reflection on the limitations posed by readability formulae that despite all the criticisms around the use of such tools:

> "…the general consensus is that readability formulae are helpful and can contribute towards a valid and actionable assessment of the readability of the text." (Leong et al., 2002, p.127)

I recognise the suggestions and opinions presented in these papers and in doing so defend the use of these tools for my investigation as they represent valuable indicators of the readability of correspondence. In addition, when used as a comparative tool (such as using the formulae to determine if profitable companies disclosures are more readable) as opposed to suggesting a definitive required education level, many of the criticisms (typically based on the inaccuracy of calculated education levels) are neutralised.

The Flesch formula Based with its extensive use in previous studies and its acceptance in the literature will be the primary readability indicator adopted. However, for the purpose of completeness and robustness other indicators to measure the concept of readability are included. These are the Flesch–Kincaid grade formula, the Smog formula and finally the Fog formula. These indicators are extracted from the computational linguistics programme Readability Calculations (version 3.4 by Micro Power & Light) once raw data is imported. First released in 1982, the current version of this software benefits from over 25 years of successful user implementations and feedback refinements. A key benefit of this package is that unlike other computational linguistics programmes such as Microsoft Words inbuilt Flesh score, Readability Calculations is custom built for the assessment of readability and includes documentation on its use as well as prep programs. It also provided results that matched manual calculations during all initial tests conducted.

4.3.2 Thematic

Thematic research in literature has typically investigated the association between positive and negative themes in corporate correspondence and firm's financial performance. As discussed previously, I make use of a negative keyword count, consistent with most of the literature, but also make use of a positive keyword count. Included on the following page, table 3 presents my negative keyword list based on the list used in Abrahamson and Park (1994). My positive keyword list is also included, based on the antonyms of the words included in the negative keyword list. The computational linguistics programme, DICTION 6.0 (discussed below), is used to administer a word count based on these two lists as custom dictionaries.

Adding to thematic literature, this research makes use of additional themes in correspondence based on the computational linguistics programme, DICTION 6.0, and its outputs. This allows for the assessment of any potential relationship between the variables of Activity, Optimism, Certainty, Realism and Commonality and company performance. These variables, their definitions and the formula DICTION 6.0 uses to calculate them are included as table 2 below.

Table 2: DICTION Master Variables

Variable	Definition	Formula
Certainty	Language indicating resoluteness, inflexibility, and completeness and a tendency to speak ex cathedra	[Tenacity + Levelling + Collectives + Insistence] – [Numerical Terms + Ambivalence + Self Reference + Variety]
Optimism	Language endorsing some person, group, concept or event or highlighting their positive entailments.	[Praise + Satisfaction + Inspiration] – [Blame + Hardship + Denial]
Activity	Language featuring movement, change, the implementation of ideas and the avoidance of inertia.	[Aggression + Accomplishment + Communication + Motion] – [Cognitive Terms + Passivity + Embellishment]
Realism	Language describing tangible, immediate, recognizable matters that affect people's everyday lives.	[Familiarity + Spatial Awareness + Temporal Awareness + Present Concern + Human Interest + Concreteness] – [Past Concern + Complexity]
Commonality	Language highlighting the agreed upon values of a group and rejecting idiosyncratic modes of engagement.	[Centrality + Cooperation + Rapport] – [Diversity + Exclusion + Liberation]

Based on data contained in Digitext Inc. (2011)

Table 3: Negative/Positive Connotation List

Negative Connotations		Positive Connotations	
Accident	Inadequate	Ability	Increase
Adverse	Incompetence	Able	Lifted
Adversely	Insolvency	Accept	Lucrative
Anxious	Insufficiency	Accomplish	Optimistic
Apprehension	Insufficient	Adequacy	Pleased
Bad	Lack	Adequate	Pleasing
Badly	Liquidation	Advantage	Positive
Behind	Lose	Advantageous	Positively
Catastrophe	Losing	Ahead	Productive
Complications	Loss	Assured	Profit
Concern	Losses	Benefit	Profitable
Concerned	Lossmaking	Best	Progressive
Concerns	Lost	Boom	Prosper
Confrontational	Missed	Boosted	Prosperous
Crash	Negative	Buoyancy	Reassured
Crisis	Negatively	Capable	Rewarding
Damaging	Poor	Competence	Rise
Decline	Poorly	Confidence	Rising
Deficits	Powerlessness	Confident	Robust
Delay	Problem	Confidently	Safe
Delayed	Problems	Creditworthiness	Satisfaction
Delays	Recession	Definitely	Satisfactory
Depraved	Ruthless	Desirable	Satisfied
Depressed	Shortage	Encouraged	Satisfy
Deterioration	Shortfall	Encouraging	Save
Difficult	Sluggish	Enhanced	Saving
Difficulties	Slump	Enhancement	Solutions
Dip	Suffered	Excess	Solvency
Disappointed	Tough	Expansion	Stable
Disappointing	Trailing	Expansions	Strength
Disappointment	Troubled	Favourable	Strengthened
Disaster	Unable	Favourably	Strong
Distress	Unbeneficial	Flourish	Stronger
Disturbed	Undesirable	Flourishing	Succeed
Downturn	Unfavourable	Fortified	Succeeded
Downturns	Unfortunately	Fortifying	Success
Drop	Unprofitable	Gain	Successful
Dropping	Unrealized	Good	Superior
Fail	Unsuccessful	Grow	Surplus
Failed	Weak	Growing	Surpluses
Failure	Weakened	Growth	Thrived
Fragile	Weakening	Growths	Upgrading
Hazardous	Weaker	Improve	Upturn
Helplessness	Weakness	Improved	Victory
Hostile	Worst	Improvement	Wealth
Inability		Improvements	Well
Total Negative Words: 91		Total Positive Words: 92	

The negative lest is based on Abrahamson and Park (1994) with the positive list based on the negative lists antonyms.

In order to calculate variables, the individual disclosure files are loaded into DICTION 6.0 as per the programs basic guidelines. To ensure the varying lengths of narratives do not influence scores (thus allowing comparisons that are unaffected by disclosure varying lengths) all values are standardised to a 500-word norm as per DICTION's unsegmented average setting. Any sample that does not reach a 500-word minimum undergoes an extrapolation to a 500-word equivalent. Similarly, the word counts outputted from the positive and negative word count lists are converted to a 500-word basis.

4.3.3 Independent/Control Variables

In assessing my hypotheses, I account for a variety of explanatory variables that prior literature has shown to be associated with the readability or thematic content of corporate disclosures. These variables are discussed below, with table 4 at the end of this section summarising the variables and indicators used.

Size: It has been shown that company size can capture many different aspects of a company's operational and business environment (Li, 2008). Richards and van Staden (2011) included size as they expected larger companies to have longer and more complex annual report disclosures (which they confirmed); a notion they commented as being supported by Bradbury (2009) yet was in opposition to the findings of Li (2008). On a theoretical level, agency theory would suggest that larger companies face larger agency and monitoring costs due to elevated information asymmetry issues. As managers have an incentive to disclose an optimal amount of information in order to reduce any information asymmetry and thus any related costs it follows that larger companies would have more disclosures. Similar to most research, I will define company size as the market value of the company at each fiscal year balance date. The market capitalisation is extracted from the Osiris databases wherever possible with missing data collected from the DataStream database. To allow direct comparison between Australia and New Zealand, these values are converted into New Zealand currency (NZ$) at the relevant balance day conversion rates.

Leverage/Solvency: Prior research, such as Bradbury (2009) who investigated the extent of voluntary disclosures in 29 multi-product firms on the New Zealand Stock Exchange, has found significant relationships between solvency and leverage rations and levels of company disclosures. However, empirical evidence on the actual effects of these elements on levels of disclosure and its quality is somewhat inconclusive (Khlif & Souissi, 2010). For example, Naser (1998) and Alsaeed (2006) both found positive and significant relationships between disclosure levels and leverage. While papers such as Eng and Mak (2003) and Hassan et al. (2006) found a negative relationship was present. Focusing on readability of disclosures and leverage, Richards and van Staden (2011) failed to identify any significant relationship. To capture any effect such elements may have, I use the year-end solvency and current ratios (as extracted from the Osiris or DataStream databases).

Industry: Stanga (1976) argues that disclosed information may well be used actively by competitors to gain market share. Therefore, a company's management may seek to 'disguise' this information with complicated wording and presentation. As competition intensity varies depending on the industry, it would follow that industry would theoretically influence the readability of correspondence. Studies such as Li (2008), and Richards and van Staden (2011) provide evidence that such a relationship does exist. I suggest that a simplified motivation for inclusion is the concept that companies in some industries may have naturally more complicated correspondence or disclosures due to the different information they must disclose. Regardless of why such a relationship may exist I classify my investigated companies into one of five simplified industries with a dichotomous variable created for each; the event of operating within that industry is classified as '1' or not operating in that industry as '0'. These simplified classifications are based on industry classifications within Osiris.

Country: While Australia and New Zealand are close economic partners, I include a dichotomous variable in order to assess the existence of any Trans-Tasman difference in the disclosures. If the companies' primarily listing is in Australia then this variable will be recorded as '1', else '0'.

Profitability/Performance: It is suggested that companies with high profitability are motivated to disclose more information than those with lower profitability. Theoretically, this relationship has been justified by use of two general arguments. Firstly, good profitability allows managers to distinguish themselves in not just stock markets but also other situations such as recruitment and even product sales. Consequently, an incentive exists in this situation to increase the level of disclosures thus advancing the company's reputation. Secondly, agency theory would suggest that good performance would allow managers to actively sell and promote their superior managerial capabilities. By actively divulging more information managers could extract higher confidence levels from investors, which would in turn be reflected with higher compensation (see chapter 2 or Ahmed and Courtis (1999) or Khlif and Souissi, (2010) for further discussion on this). As a proxy for profitability I use several different indicators including return on equity (ROE), net profit margin (NPM) and return on assets (ROA). Further, in order to assess future performance there will in fact be two variables for each indicator. One at t-0 (current year) and one at t+1 (next year). These ratios are also extracted from the DataStream and Osiris databases.

Table 4: Independent/Control Variables Summary

Variable	Description
Size	Market value represented in New Zealand dollars.
Leverage/Solvency	Solvency and current ratios at year end.
Industry	Dichotomous variable created for each industry classification to capture the event of operating within that industry '1' or not operating in that industry '0'.
Country	Dichotomous variable called Australia. If the company primarily listing is in Australia then this variable will be set as '1', else '0'.
Profitability	Return on equity, return on assets and net profit margin; all at time period t-0.
Future Profitability	Return on equity, return on assets and net profit margin; all at time period t+1.

5. Results

Presentation of Results

In the following chapter, I present the results of statistical tests and analysis on the combined date set (ASX100 and NZX50). A country indicator is included to capture any potential difference causes by the two different sample pools particularly at multivariate testing stages. In addition to this combined analysis, a detailed Trans-Tasman comparison on the data set split into New Zealand and Australia, which can be found as additional research at the end of this thesis.

A Note on Normality

Many tests used by researchers, such as Pearson's bi-variate correlations, assume the variables under investigation are normally distributed. As a result they can provide misleading results for data where normality does not exist. To ensure any observations or conclusions I draw from my data are statistically valid I tested the normality of my data sets before conducting any other tests.

The Shapiro-Wilk normality test was conducted on all data sets (Australian, New Zealand and combined), across all variables and separated into the individual disclosure types. This normality test was selected as it requires a sample size of between seven and 2,000 (Shapiro & Wilk, 1965) and provides a single, easily interpreted result. Following the general guidelines of the tests, some of my variables were normally distributed (tests with p values greater than .05) however; these were only in a particular country or within a particular disclosure type, no variable consistently meet normality requirements. Therefore, for validity purposes I decided that, in general, normality is as the very least questionable for all my data. To reduce any issues this could potentially cause, my analysis in the following sections utilise tests that did not assume normality wherever possible.

Caution on Interpreting Descriptive Results

The final note I must communicate regards the interpretation of the descriptive results. The means that are presented in the following descriptive statistics are the descriptive statistics for my data set. The reader must not consider them as descriptive of the NZX50 or the ASX100. For example, the average market value for companies on the NZX50 is approximately NZ$0.75 billion yet as presented in the following section the average market value in my data

set is NZ$6.5 billion. This is because my data set is NZX50 and ASX100 disclosures, and as larger companies typically provided more disclosures for testing (i.e. they had CSR reports or CSR sections in their annual reports) they were represented in the data set more often, therefore inflating the means. As an example, table 5 (below) presents the results of three factitious companies, each of differing size and each with different disclosures available. This sample results in an average market value result of $2.92 million, however in reality the average market value of the companies is $2.17 million. The largest company, Company XYZ, had an example of each tested disclosure whereas the two smaller companies did not, allowing Company XYZ's large market value to inflate the average.

Table 5: Average/Mean Results Interpretation

Company	Disclosure	Size (Market Value)
Company X	Annual Report Discussion Section	$500,000
Company X	Annual Report Notes	$500,000
Company Y	Annual Report Discussion Section	$1,000,000
Company Y	Annual Report Notes	$1,000,000
Company Y	CSR Report Opening Letter	$1,000,000
Company Y	CSR Report Main Sections	$1,000,000
Company XYZ	Annual Report Chairman Letter	$5,000,000
Company XYZ	Annual Report CSR Sections	$5,000,000
Company XYZ	Annual Report Discussion Section	$5,000,000
Company XYZ	Annual Report Notes	$5,000,000
Company XYZ	CSR Report Opening Letter	$5,000,000
Company XYZ	CSR Report Main Sections	$5,000,000
	Average Disclosure Market Value	$2,916,666.67
	Average Company Market Value	$2,166,666.67

5.1 Descriptive Statistics

Lack of data in utilised databases and rare conversion issues with some of the PDF reports resulted in a final data set of 39 companies from the NZX50 and 85 companies from the ASX100 (a list of these companies is available as appendix 2). A total of 255 individual disclosures were identified and extracted from the NZX50 companies, while 568 were extracted from ASX100 companies. By combining these two data sources, the total data set contained 823 individual texts. Table 6 below provides the disclosure frequencies and as expected the data was dominated by the three typical annual report sections: chairman letters, discussion sections and notes. These three disclosures make up 79% of the tested disclosures while CSR based disclosures, made up just 21% of the sample.

Table 6: Disclosure Representation

	Frequency	%
Annual Report CSR	0	7.17
CSR Report Opening Letter	0	6.56
CSR Report Remaining	0	7.29
Annual Report Chairman	0	22.72
Annual Reports' Notes	0	28.31
Annual Report Discussion	0	27.95
Total	0	100

Table 7 provides the industry frequency counts, showing that services and investment/finance were the largest industries, making up 25.3% and 21.9% of the samples respectively, while primary and energy were the smallest, making up just 9.0% and 9.8% respectively.

Table 7: Industry Composition

	Total	
	N	%
Primary	74	9.0
Energy	81	9.8
Goods	137	16.7
Industrial	143	17.4
Invest./Fin.	180	21.9
Services	208	25.3
Total	823	100.0

By breaking these industry representations down to the number of different reports (and the number of annual reports with CSR sections) shows the energy industry had the greatest proportion of CSR reports (32.1%) followed by industrial and goods with 26.4% and 26% respectively. Services had the poorest number of CSR reports with just 10.7%. The industry proportions for annual reports including CSR sections followed the trends identified in CSR reports with almost identical industry rankings, on average 25% of annual reports included an identifiable CSR section.

Table 8: Number of Reports

	CSR Reports	Annual Reports	AR CSR Sections	CSR Reports %	AR CSR Sections %
Services	8	67	11	10.7	16.4
Invest./Fin.	11	52	12	17.5	23.1
Primary	5	22	4	18.5	18.2
Goods	13	37	11	26	29.7
Industrial	14	39	14	26.4	35.9
Energy	9	19	7	32.1	36.8

Table 9 (on the following page) provides the descriptive statistics. The average disclosure length was 9,111 words, although the standard deviation suggests that around 95% of the disclosures were between 0 and 29,600 words. The DICTION master variables all had an average word count of between 44 and 53 words (per 500), with relatively small standard deviations of 2 to 4 words. However, the large range values indicate that there were some outliers present.

The positive and negative word counts were the smallest counts averaging just 5.67 and 1.14 words respectively. Negative word use had small variance with a range of just 15 words and a standard deviation of just 1.5 words, suggesting that 95% of the negative word counts were in the range of 0 to 4.2 words. The positive word counts varied more, with a range of 36 words (140% larger than the negative count) and the standard deviation suggesting that 95% of the counts were between 0 and 16.76 words.

The required readability grades indicated by the Flesch-Kincaid, Fog and Smog formulae had large ranges suggesting required grades of 11 through to 22.27 while the Flesch score ranged from 1 through to 56. The standard deviations suggest that at least 95% of the disclosures scored between grade 11.39 (based on the Flesch Kincaid formula) and 22.11 (based on the

Fog formula). Interpretation of the mean reading scores suggests that at least a post-graduate level education would be required to read the disclosures effectively.

Table 9: Complete Descriptive Statistics

	N	Min	Max	Range	Mean	Std. Dev.
Activity	824	0	62.53	62.53	49.02	4.21872
Optimism	824	42.80	65.52	22.72	51.10	2.45191
Certainty	824	40.64	73.68	33.04	51.97	4.16902
Realism	824	13.88	61.02	47.14	44.49	3.21341
Commonality	824	35.19	153.37	118.18	52.75	4.69248
Positive	824	.00	35.91	35.91	5.67	5.54606
Negative	824	.00	15.00	15.00	1.14	1.54670
Flesch	824	1.00	56.00	55.00	29.13	8.00073
Flesch Kincaid	824	10.00	21.50	11.50	15.05	1.83019
Fog	824	12.80	24.40	11.60	18.31	1.89990
Smog	824	11.10	20.90	9.80	16.24	1.40320
Total Words	824	43.00	95181.00	95138.00	9111.16	10245.12
MV NZ$	809	37747200	2.00E11	2.00E11	1.13E10	2.331E10
Profit Margin %[1]	802	-336580	192.00	336772	-1379.85	20649.70
Fut. Profit Margin %[1]	803	-336580	857.00	337437	-1257.85	20547.31
ROE %	804	-115.07	1221.00	1336.07	16.89	79.16990
Fut. ROE %	802	-115.07	120.91	235.98	9.22	23.94281
ROA %	804	-47.06	47.31	94.37	4.55	10.08146
Fut. ROA %	802	-47.06	31.40	78.46	3.88	9.40843
Current	806	.02	19.20	19.18	1.60	1.80896
Solvency	809	-114.01	93.25	207.26	41.97	24.49217

[1]Profit margin results are heavily skewed by the abnormal results of Pike River Coal Ltd. removal of this company's results creates a mean profit of 1.7% and future profit of 5.4% with standard deviations of 81.89 and 61.52 respectively.
N values vary due to some missing data in databases.

Expanding on these results table 10 (on the following pages) presents the descriptive statistics separated into the individual disclosure types to allow for a comparison.

Table 10: Separated Disclosures Descriptive Statistics

Disclosure		N	Minimum	Maximum	Mean	Std. Dev.
AR CSR	Activity	59	35.87	58.74	50.0198	2.93262
	Optimism	59	48.83	61.09	52.3929	2.13256
	Certainty	59	40.64	56.45	50.0690	3.22136
	Realism	59	37.98	50.32	43.6032	2.65786
	Commonality	59	35.19	58.08	52.2759	3.36664
	Positive	59	1.84	34.50	6.4024	5.78791
	Negative	59	.00	3.25	.6583	.77534
	Flesch	59	1.00	39.00	22.5085	7.56209
	Flesch Kincaid	59	12.30	21.50	15.8254	1.65702
	Fog	59	14.80	24.40	18.7678	1.75651
	Smog	59	13.50	20.30	16.4610	1.25986
Chair	Activity	188	7.28	55.26	48.6365	4.92345
	Optimism	188	47.14	65.52	53.3179	2.32183
	Certainty	188	40.70	73.68	49.8327	3.52210
	Realism	188	32.71	54.06	46.3122	2.81530
	Commonality	188	45.40	153.37	51.9618	7.71721
	Positive	188	.00	35.91	12.0489	5.86944
	Negative	188	.00	11.63	1.9351	2.00904
	Flesch	188	13.00	53.00	35.2766	7.83848
	Flesch Kincaid	188	10.10	19.20	14.1314	1.66500
	Fog	188	13.00	24.20	17.5516	1.86898
	Smog	188	12.60	20.60	15.5245	1.33638
CSR Open	Activity	54	25.17	62.53	50.4046	5.12538
	Optimism	54	46.07	62.91	53.3667	2.54256
	Certainty	54	40.75	54.70	48.7033	2.80869
	Realism	54	32.75	61.02	46.3498	3.48541
	Commonality	54	37.05	57.46	51.0670	2.87160
	Positive	54	.00	20.21	7.6641	3.98333
	Negative	54	.00	4.50	.9091	1.07376
	Flesch	54	7.00	45.00	29.2593	8.63557
	Flesch Kincaid	54	10.80	19.80	14.8722	1.91049
	Fog	54	14.00	23.40	17.8704	1.86898
	Smog	54	13.20	19.80	15.7556	1.34454
CSR Main	Activity	60	21.98	56.14	50.0980	4.06211
	Optimism	60	46.79	56.97	50.9647	1.79710
	Certainty	60	42.90	59.17	50.1997	3.02378
	Realism	60	13.88	49.33	41.8503	4.83253
	Commonality	60	47.02	56.80	51.8073	2.33497

	Positive	60	.64	9.33	3.6258	1.82509
	Negative	60	.00	5.79	1.0650	1.37294
	Flesch	60	6.00	44.00	28.8167	7.00724
	Flesch Kincaid	60	11.20	18.50	14.5767	1.41785
	Fog	60	14.30	21.50	17.5117	1.48096
	Smog	60	13.30	18.50	15.5950	1.04952
Disc	Activity	230	6.45	58.87	48.8863	3.59381
	Optimism	230	42.80	56.57	50.1965	1.50925
	Certainty	230	41.32	67.22	53.1870	4.03973
	Realism	230	36.57	55.77	43.9811	2.54181
	Commonality	230	43.90	65.40	53.1769	3.22201
	Positive	230	.00	16.23	3.2778	2.95990
	Negative	230	.00	15.00	.5676	1.21073
	Flesch	230	13.00	56.00	28.9478	6.03967
	Flesch Kincaid	230	10.00	19.30	14.8948	1.44130
	Fog	230	12.80	22.80	18.3943	1.60597
	Smog	230	11.10	19.30	16.2287	1.17211
Notes	Activity	233	-3.76	58.21	48.6124	4.14680
	Optimism	233	43.74	55.47	49.3924	1.39595
	Certainty	233	42.02	70.90	54.1770	3.81474
	Realism	233	28.96	51.89	43.9947	2.71728
	Commonality	233	42.04	64.50	53.7060	3.34802
	Positive	233	.00	35.48	2.7672	3.25576
	Negative	233	.00	8.50	1.2455	1.40426
	Flesch	233	8.00	38.00	26.0687	6.81811
	Flesch Kincaid	233	12.10	21.10	15.9223	1.96873
	Fog	233	15.00	24.40	19.0429	2.01014
	Smog	233	13.90	20.90	17.0365	1.36839

Annual reports' chairman letters had the highest use of positive language (12 keywords per 500) followed by CSR reports' opening letters (8 keywords per 500) and annual reports' CSR sections (7 keywords per 500). The remaining disclosures had considerably less positive language using around 3-4 positive keywords words per 500. Likewise, negative word use was higher in annual reports' chairman's letters with around 2 negative keywords per 500; however, financial notes had the second highest counts at just over one keyword. All the remaining disclosures had less than one keyword per 500.

With the exception of the positive and negative word use, the remaining variables were generally consistent across the disclosure types. Table 11 provides details on the ranges in counts/scores within table 10. Supporting my initial observation above the greatest differences in the disclosures means regarded positive word use, with a range of 9.3 words (156% of the mean). Likewise, negative word count was identified as having a significance range of 1.4 words (129% of the mean). The Flesch score was the only other dependent variable that indicated a significant variance in disclosures means with a range of 12.8 points (44.83% of mean); however the remaining readability formulae had smaller ranges of 1.8 (12% of mean) or less. The DICTION variables had ranges of 5.5 words (11% of mean) or less.

Table 11: Range in Disclosures Mean Counts and Scores

Variable	Range of Scores	Average Count/Score	Range as % of Count/Score
Activity	1.8	49.4	3.62%
Optimism	4.0	51.6	7.70%
Certainty	5.5	51.0	10.73%
Realism	4.5	44.3	10.15%
Commonality	2.6	52.3	5.04%
Positive	9.3	6.0	155.62%
Negative	1.4	1.1	128.59%
Flesch	12.8	28.5	44.83%
Flesch Kincaid	1.8	15.0	11.91%
Fog	1.5	18.2	8.42%
Smog	1.5	16.1	9.39%

5.2 Bi-Variate

Moving on to bi-variate analysis, Kendall Tau correlations for the readability and thematic indicators are summarised in table 12 on the following page. As there are so many variables and therefore correlations it is impractical to elaborate on what relationship each one suggests, rather I will comment on what correlations are positive and what are negative. To interpret these, positive correlations suggest that increases in the given variable (the first column in table 12) are associated with increases in the identified variables (second and third columns of table 12). If the positive correlation is with a dichotomous variable such as an industry, country or disclosure type then the occurrences of these (such as a company being in that given industry) is associated with increases in the given variable (such as the Flesch score). If the positive correlation is with a scale-based variable such as profit, market value, or size then increases in these variables are associated with increases in the given variable. Finally, in the case of negative correlations, the opposite relationship exists i.e. increases in the identified variables are associated with decreases in the given variables.

The tests found readability to be positively correlated with Optimism, Realism, positive and negative word use, profitability (both current and future), chairman letters, CSR disclosures (but not annual report CSR sections) and finally the services industry. Negative correlations existed with Certainty, Commonality, MV, annual report CSR, annual reports' notes, Australia disclosures, and the goods industry. In addition, all four readability formulae were correlated with one another.

Activity had positive correlations with company size (MV), profitability (both current and future), Australian classification, the goods industry, and finally CSR disclosures. Negative correlations suggested that the use of language indicated by Certainty and Commonality were associated with decreased levels of Activity. Likewise, solvency and annual report discussions had negative correlations with Activity.

Certainty had positive correlations with Commonality, annual report discussion sections, annual reports' notes and the services industry. Negative correlations existed with Activity, Optimism, Realism positive and negative word counts, readability, primary industry classification, company size (MV) and finally the following disclosures CSR standalone reports, annual report CSR sections, and annual report chairman letters.

Table 12: Kendall Tau Correlation Summary

Variable	Positive	Negative
Flesch	**Optimism, Realism, Positive, Negative, ROE, Fut. ROE, Fut. ROA, AR Chair, Services,** ROA	**Certainty, Commonality, Flesch Kincaid, Fog, Smog, MV, AR Notes, Australia, AR CSR,** Activity, Goods
Flesch Kincaid	**Certainty, Commonality, Fog, Smog, MV, AR CSR, AR Notes, Australia, Goods, Services**	**Optimism, Realism, Positive, Flesch, ROE, ROA, Fut. ROE, Fut. ROA, AR Chair,** Fut. Profit, CSR Main
Fog	**Certainty, Commonality, Flesch Kincaid, Smog, MV, AR Notes, Australia,** AR Disc, AR CSR	**Optimism, Realism, Positive, Flesch, ROE, ROA, Fut. ROE, Fut. ROA, CSR Main, AR Chair, Services** Profit, Fut. Profit
Smog	**Certainty, Commonality, Flesch Kincaid, Fog, AR Notes, Australia,** Goods	**Optimism, Realism, Positive, Flesch, ROE, ROA, Fut. Profit, Fut. ROE, Fut. ROA, CSR Open, CSR Main, AR Chair, Services** Profit
Activity	**MV, ROA, Fut. ROE, Fut. ROA, CSR Open, CSR Main, AR CSR, Goods,** ROE, Fut. Profit, Australia	**Certainty, Commonality, Solvency, AR Disc., AR Notes, Investment/Financial** Flesch
Certainty	**Commonality, Flesch Kincaid, Fog, Smog, AR Disc, AR Notes, Services**	**Activity, Optimism, Realism, Positive, Negative, Flesch, MV, CSR Open, CSR Main, AR Chair, AR CSR,** Primary
Commonality	**Certainty, Flesch Kincaid, Fog, Smog, AR Disc, AR Notes**	**Activity, Optimism, Realism, Positive, Flesch, CSR Open, AR Chair,** Negative, CSR Main
Optimism	**Realism, Positive, Flesch, CSR Open, AR Chair, AR CSR**	**Certainty, Commonality, Flesch Kincaid, Fog, Smog, AR Disc., AR Notes**
Realism	**Optimism, Positive, Negative, Flesch, CSR Open, AR Chair**	**Certainty, Commonality, Flesch Kincaid, Fog, Smog, MV, CSR Main AR Disc, AR CSR, AR Notes, Australia**
Negative	**Realism, Positive, Flesch, AR Chair, AR Notes**	**Certainty, AR Disc, AR CSR,** Commonality
Positive	**Optimism, Realism, Negative, Flesch, CSR Open, AR Chair, AR CSR,** Primary	**Certainty, Commonality, Flesch Kincaid, Fog, Smog, AR Disc, AR Notes**

Variables in bold were found statistically significant at the .01 level, else significant at the .05 level

Commonality had positive correlations with Certainty, annual report discussion sections and annual reports' notes. Negative correlations were found with Activity, Optimism, Realism, positive and negative word use, readability, CSR reports and annual report chairman letters.

Optimism had positive correlations with Realism, positive word use, readability, CSR reports' opening letters and finally annual reports' chairman letters and CSR sections. Negative correlations existed with Certainty, Commonality, and finally annual report discussion and notes sections.

The final DICTION master variable, Realism, had positive correlations with Optimism, positive and negative word use, readability, CSR reports' opening letters, annual report chairman letters, and New Zealand classification. Negative correlations existed with Activity, Certainty, Commonality, company size (MV), CSR reports' main sections, annual report discussion, notes and CSR sections and finally Australian classification.

Negative word use was positively correlated with Realism, positive word use, readability (but only the Flesch score), and finally annual reports' chairman letters and notes. Negative correlations were found with Certainty, Commonality and finally annual report CSR and discussion sections.

Positive word use had positive correlations with Optimism, Realism, negative word use, readability, CSR reports' opening letters, annual reports' chairman and CSR sections, and finally primary industry classification. Negative correlations were present with Certainty, Commonality, and finally annual reports' discussion and financial notes sections.

The final bi-variate test I conduct is a Kruskal-Wallis test. This is used to establish whether, overall, there are significant differences between disclosure types that I can then explore and test further. The test is a non-parametric method for establishing whether samples originate from the same distribution. Significant results imply that at least one of the samples is different from the other samples. In this case it would imply that one of the disclosure types has significantly different dependent variable scores. The tests all reported significance levels of .000 indicating that there is significant differences in the disclosure types providing strong evidence that there is differences within disclosure types. In the next chapter, I explore what these differences are using multivariate techniques to isolate what relationships are significant.

Table 13: Kruskal-Wallis Bi-Variate Results

		Activity	**Optimism**	**Certainty**	**Realism**	**Common-ality**	**Positive**	**Negative**	**Flesch**	**Flesch Kincaid**	**Fog**	**Smog**
	N	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
CSR Open	59	513.0	564.8	300.3	326.4	416.6	491.4	332.1	217.1	525.0	474.7	457.6
CSR Main	188	390.1	634.3	277.7	571.9	303.8	673.9	518.7	589.5	290.7	317.5	286.6
AR Chairman	54	601.8	635.4	209.4	567.6	294.4	561.3	358.6	422.3	393.8	355.9	321.6
AR Disc.	60	564.1	429.2	290.4	243.7	346.9	371.1	424.5	409.1	346.0	302.4	290.7
AR CSR	230	376.2	330.4	495.1	354.2	455.6	305.2	300.8	399.3	406.2	439.5	426.7
AR Notes	233	358.0	220.1	546.7	370.8	500.9	263.7	466.9	330.7	510.0	488.3	541.1
Chi-Square		88.21	414.61	230.28	166.14	96.81	394.07	110.25	172.40	106.67	76.51	147.22
df		5	5	5	5	5	5	5	5	5	5	5
Asymp. Sig.		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

5.3 Multivariate

Linear Regression models are presented below for each of the readability indicators, DICTION master variables, and finally the positive and negative keywords. The purpose of this is to exert statistical control and isolate any potential relationship between the dependant indicators and the other control/independent variables. I should point out that the use of linear regression assumes the normal distribution of the underlying data, which I have shown in previous sections as unlikely for my data. However, I justify its use at this point on the grounds of a trade-off type situation. While the previous descriptive and bivariate analysis has utilised methods that do not require normally distributed data sets (wherever possible), they have come at the cost of controlling for any possible interrelationships. For example, earlier in presenting the bi-variate results of I commented:

> "Activity had positive correlations with company size (MV), profitability (both current and future), Australian classification, the goods industry, and finally CSR disclosures." (This research, pg. 46)

The problem with bi-variate analysis is a correlation does not mean there is an actual direct relationship. The results found Activity positively correlated with both company size and Australian classification. However, it is possible that Activity is not directly related to company size (so changes in MV would not have any effect on Activity or visa-versa), rather company size is directly related to Australian classification (it was shown that Australian companies were generally larger) and Australian companies use more language indicated by Activity. Multivariate analysis can help deal with situations like this by allowing a researcher to identify the variables that have the strongest relationships with the dependent variables (are predictors).

As mentioned earlier, this research includes several readability indicators and profitability indicators. The primary readability measure is the Flesch score, being the most common in previous research. Likewise, the net profit margin is the primary profitability indicator. For the purpose of this section, I will use just these two indicators with the remaining used in sensitivity testing.

5.3.1 Readability

The theoretical linear model tested for the readability of disclosures is as follows (with readability being the Flesch score):

Equation 5: Theoretical Readability Linear Regression Model

Readability = α + β1 (MV NZD) + β2 (Profit Margin) + β3 (Current) + β4 (Solvency) + β5 (Fut. Profit) + β6 (CSR Open) + β7 (CSR Main) + β8 (AR Chair) + β9 (AR CSR) + β10 (AR Disc)+ β11 (AR Notes) + β12 (Australia) + β13 (Energy) + β14 (Goods) + β15 (Industrial) + β16 (Investment) + β17 (Primary) + β18 (Services) + e

Initial testing revealed issues with collinearity between the six industry control variables whereby SPSS would not allow the variables to be all entered into the model. To address this issue model construction was completed utilising two blocks. The first block included the predictor and control variables in the above model from β1 through to β12 (inclusive); these variables were included utilising the 'enter' method whereby they are all forced into the model. The second block of variables represented the six industry control variables, namely energy, goods, industrial, investment, primary and services; these were entered via the 'stepwise' method with 0.05 entry and 0.10 exit criteria imposed. Under this method each variable is entered in sequence and its value assessed. If adding the variable contributes to the model then it is retained, but the other stepwise variables in the model are then re-tested to see if they are still contributing to the success of the model. If they no longer contribute significantly, they are removed. As a result, variables entered in this method are only the predictors that add value to the model, i.e., can explain variance not explained by the other included predictors (Brace *et al.*, 2009).

The resulting model is presented on the following page (table 14). Appendix 4 includes the residual plots, which show that the assumption that the residuals or error terms are normally distributed appears to be upheld, so significance levels should be accurate and the model is valid. ANOVA tests show the model to be statistically significant with an F value of 25.16 and significance of .000. The model achieves an adjusted R^2 of .313 suggesting that 31.3% of the variance in the Flesch score was accounted for by the variance of the model's predictor variables.

Table 14: Flesch Linear Model
(F value 25.16, Adj. R^2 .313)

	Expected Direction	Un-Standardised Beta	Error	Standardised Beta	t	Sig
(Constant)		23.431	6.769		3.462	.001
MV NZD	-	.000	.000	.006	.202	.420
Profit Margin	+	.000	.000	-.019	-.639	.262
Leverage		-.162	.187	-.029	-.869	.385
Solvency		.000	.011	.000	-.002	.999
Fut. Profit	+	.000	.000	-.001	-.028	.489
AR Chair		5.754	.622	.300	9.245	.000
AR CSR		-5.693	.967	-.182	-5.886	.000
AR Notes		-3.240	.582	-.181	-5.571	.000
Australia		-5.360	.570	-.297	-9.401	.000
Energy		4.902	6.756	.184	.726	.468
Goods		5.375	6.739	.251	.798	.425
Industrial		6.765	6.745	.319	1.003	.316
Investment		6.504	6.732	.326	.966	.334
Primary		6.462	6.766	.230	.955	.340
Services		7.636	6.731	.410	1.134	.257

The variables MV NZD, Profit Margin and Future Profit Margin all have expected directions and as such are 1-tailed significance levels, the remaining variables are 2-tailed.

The model found just four significant predictors for readability (based on the Flesch score). Suggesting that a company's profitability, leverage and solvency had no relationship with readability. Likewise, future profitability had no bearing on the readability of disclosures. These findings would suggest that there is no manipulation of readability levels to obfuscate performance.

Three of the five disclosure types were significant predictors of readability. Annual reports' chairman letters, CSR sections and financial notes were all significant at the .001 level with betas of 5.754, -5.69 and -3.240 respectively. The model suggests that Annual reports' chairman letters had Flesch scores 5.754 points higher than base scores while annual reports' CSR sections and financial notes Flesch scores were 5.69 and 3.240 points lower. With higher Flesch scores indicating texts are readable this suggests chairman letters were the most readable disclosures while annual reports' CSR sections and financial notes are the most complicated.

The final significant predictor for the Flesch model is the variable Australia. This also reached a significance level of .001 and a beta of -5.360. The model would suggest that the disclosures of companies listed in New Zealand had Flesch scores 5.360 points higher than Australian listed companies. This suggests that New Zealand disclosures are typically less

complicated and more readable than Australian disclosures. Interestingly no industry indicator was significant in the model, suggesting that companies operating industry has no bearing on the readability of their disclosures.

Sensitivity: Additional Readability models

As previously mentioned this research has included three separate measures of profitability (each a percentage), being net profit, return on equity and return on assets. I included these three measures so I could conduct some sensitivity analysis to test whether the indicator used modified researches results. Table 15 presents the Kendall's tau correlations for these variables (for both the current year and the future year).

Table 15: Sensitivity Kendall's tau Correlations - Profitability

		Profit Margin	ROE	ROA	Fut. Profit Margin	Fut. ROE	Fut. ROA
Profit Margin	Coefficient	1.000	.382**	.404**	.355**	.141**	.103**
	Sig.	.	.000	.000	.000	.000	.000
	N	802	799	799	798	795	795
ROE	Coefficient	.382**	1.000	.671**	.162**	.410**	.267**
	Sig.	.000	.	.000	.000	.000	.000
	N	799	804	804	798	800	800
ROA	Coefficient	.404**	.671**	1.000	.113**	.252**	.375**
	Sig.	.000	.000	.	.000	.000	.000
	N	799	804	804	798	800	800
Fut. Profit Margin	Coefficient	.355**	.162**	.113**	1.000	.443**	.417**
	Sig.	.000	.000	.000	.	.000	.000
	N	798	798	798	803	800	800
Fut. ROE	Coefficient	.141**	.410**	.252**	.443**	1.000	.696**
	Sig.	.000	.000	.000	.000	.	.000
	N	795	800	800	800	802	802
Fut. ROA	Coefficient	.103**	.267**	.375**	.417**	.696**	1.000
	Sig.	.000	.000	.000	.000	.000	.
	N	795	800	800	800	802	802

The correlations between the three profitability indicators are all significant at .001 levels and complementary in direction. Likewise, the current year profitability indicators were correlated with the future profitability indicators.

Table 16 on the following page shows the correlations of the various readability formulas, which were also included to enable sensitivity testing. These formulas were all strongly correlated with one another with significance levels at .001 and were consistent in direction.

These correlations provide strong evidence of the convergent validity of the various indicators.

Table 16: Sensitivity Kendall's tau Correlations - Readability

		Flesch	Flesch Kincaid	Fog	Smog
Flesch	Correlation	1.000	-.770**	-.719**	-.729**
	Sig.	.	.000	.000	.000
	N	824	824	824	824
Flesch Kincaid	Correlation	-.770**	1.000	.864**	.861**
	Sig.	.000	.	.000	.000
	N	824	824	824	824
Fog	Correlation	-.719**	.864**	1.000	.887**
	Sig.	.000	.000	.	.000
	N	824	824	824	824
Smog	Correlation	-.729**	.861**	.887**	1.000
	Sig.	.000	.000	.000	.
	N	824	824	824	824

The first stage of sensitivity tests used the same construction technique as was used for the original Flesch model however used the Flesch Kincaid, Fog and Smog formulae as indicators of readability. These models are included below and on the following pages as tables 17 through to 19.

Table 17: Flesch Kincaid Linear Model
F value 15.61, Adjusted R2 0.277

	Expected Direction	Un-Standardised Beta	Un-Standardised Error	Standardised Beta	t	Sig
(Constant)		15.154	1.639		9.244	.000
MV NZD	+	.000	.000	.006	.168	.434
Profit Margin	-	.000	.000	-.011	-.337	.368
Current		.085	.045	.067	1.883	.060
Solvency		.001	.003	.014	.420	.674
Fut. Profit	-	.000	.000	-.005	-.157	.438
Australia		1.113	.138	.270	8.058	.000
Energy		-.885	1.637	-.145	-.540	.589
Goods		-.957	1.633	-.196	-.586	.558
Industrial		-1.267	1.634	-.262	-.775	.438
Investment		-1.060	1.631	-.233	-.650	.516
Primary		-1.389	1.639	-.216	-.847	.397
Services		-1.609	1.631	-.378	-.986	.324
AR Notes		1.084	.146	.265	7.411	.000
AR Chair		-.656	.156	-.150	-4.210	.000
AR CSR		.702	.238	.098	2.946	.003
CSR Main		-.548	.239	-.077	-2.295	.022

The variables MV NZD, Profit Margin and Future Profit Margin all have expected directions and as such are 1-tailed significance levels, the remaining variables are 2-tailed.

All three of the additional models are weaker than the original Flesch model with adjusted R^2 values of .185-.277 companied to Flesch's .313; however, all three models were still statistically significant at .001 levels. As a reminder for interpreting these additional models the directions differ from that of the original Flesch model due to the direction they use to indicate improvements. In these models increases in the scores indicates poorer readability whereas increases in the Flesch score indicated improved readability.

The Flesch Kincaid model closely matches the original Flesch model, finding the same significant predictors and directions; however, it also finds standalone CSR reports' main sections significant at a .05 level. The beta of -5.48 implies that these disclosures were more readable than the disclosure baseline by half a grade. Only slightly less readable than annual reports' chairman letters that had a beta of -.656.

Table 18: Fog Linear Model
F value 12.998, Adjusted R2 0.185

	Expected Direction	Un-Standardised		Standardised		
		Beta	Error	Beta	t	Sig
(Constant)		17.583	1.737		10.125	.000
MV NZD	+	.000	.000	.001	.042	.483
Profit Margin	-	.000	.000	-.014	-.426	.335
Current		.091	.048	.070	1.894	.059
Solvency		.000	.003	.004	.113	.910
Fut. Profit	-	.000	.000	-.003	-.087	.467
Australia		1.158	.147	.271	7.899	.000
Energy		-.574	1.740	-.091	-.330	.742
Goods		-.780	1.736	-.154	-.449	.653
Industrial		-.919	1.738	-.183	-.529	.597
Investment		-.755	1.735	-.160	-.435	.664
Primary		-1.183	1.743	-.178	-.678	.498
Services		-1.370	1.735	-.311	-.790	.430
AR Notes		1.499	.154	.353	9.704	.000
AR Disc.		.842	.155	.198	5.434	.000
AR CSR		.938	.252	.127	3.717	.000

The variables MV NZD, Profit Margin and Future Profit Margin all have expected directions and as such are 1-tailed significance levels, the remaining variables are 2-tailed.

The Fog model is the weakest readability model with an adjusted R^2 value of .185. Interestingly it finds annual reports' discussion sections significant compared to the two previous models yet fails to find chairman letters or CSR reports' main sections significant. With a beta of .842, this model implies that annual reports' discussion sections are less

readable than the average baseline by 8/10 of a grade. The last additional readability indicator is the Smog formula. This model is a close match to the above Fog model finding the exact same predictors significant and insignificant; however it was stronger with an adjusted R^2 value of .225 suggesting 25.5% of the variance could be explained by the model.

Table 19: Smog Linear Model
F value 19.157, Model Sig .000, Adjusted R2 0.255

	Expected Direction	Un-Standardised		Standardised		
		Beta	Error	Beta	t	Sig
(Constant)		15.750	1.226		12.851	.000
MV NZD	+	.000	.000	.001	.041	.484
Profit Margin	-	.000	.000	-.001	-.031	.488
Current		.060	.034	.061	1.751	.080
Solvency		.000	.002	-.001	-.036	.971
Fut. Profit	-	.000	.000	.004	.116	.454
Australia		.822	.103	.261	7.948	.000
Energy		-.578	1.228	-.124	-.470	.638
Goods		-.662	1.225	-.177	-.540	.589
Industrial		-.865	1.226	-.233	-.705	.481
Investment		-.699	1.225	-.200	-.571	.568
Primary		-.974	1.230	-.198	-.792	.429
Services		-1.143	1.224	-.351	-.934	.351
AR Notes		1.502	.109	.479	13.777	.000
AR Disc.		.686	.109	.218	6.272	.000
AR CSR		.722	.178	.132	4.051	.000

The variables MV NZD, Profit Margin and Future Profit Margin all have expected directions and as such are 1-tailed significance levels, the remaining variables are 2-tailed.

The second form of sensitivity tests involved the use of other indicators of profit within the original Flesch model (i.e. ROE and ROA). These models are shown on the following pages in tables 20 and 21. Interestingly these models both found profitability to be a significant predictor of readability whereas the original model based on net profit margin did not. As shown in table 21 ROA was a significant predictor at the .05 level while both future ROE and ROA were significant at .01 levels. These additional findings suggest that companies may be manipulating the readability levels of disclosures to obfuscate profitability, but only when measured by ROA in the current year or if profitability in measured in the following year by ROE or ROA. With the exception of these additional profitability relationships, the two models find significant the exact same relationships as the original model with only minor differences in the beta values.

Table 20: Flesch Linear Model – Profit Sensitivity
(F value 26.84, Adj. R^2 .327)

	Expected Direction	Un-Standardised Beta	Error	Standardised Beta	t	Sig
(Constant)		26.552	6.692		3.967	.000
MV NZD	-	.000	.000	-.017	-.527	.299
Current		.109	.142	.025	.770	.441
Solvency		-.002	.011	-.005	-.169	.866
ROE	+	.005	.003	.049	1.587	.057
Fut. ROE	+	.036	.011	.106	3.275	.001
Australia		-5.223	.558	-.290	-9.357	.000
Energy		4.165	6.685	.156	.623	.533
Goods		4.578	6.668	.214	.687	.493
Industrial		6.057	6.672	.288	.908	.364
Investment		6.160	6.660	.308	.925	.355
Primary		6.193	6.688	.222	.926	.355
Services		6.556	6.663	.352	.984	.325
AR Chair		5.880	.614	.307	9.574	.000
AR CSR		-5.378	.960	-.172	-5.603	.000
AR Notes		-3.095	.574	-.173	-5.395	.000

The variables MV NZD, Profit Margin and Future Profit Margin all have expected directions and as such are 1-tailed significance levels, the remaining variables are 2-tailed.

Table 21: Flesch Linear Model – Profit Sensitivity
(F value 26.84, Adj. R^2 .327)

	Expected Direction	Un-Standardised Beta	Error	Standardised Beta	t	Sig
(Constant)		25.818	6.699		3.854	.000
MV NZD	-	.000	.000	-.011	-.339	.368
Current		.101	.143	.023	.707	.480
Solvency		.003	.011	.009	.295	.768
ROA	+	.044	.026	.055	1.704	.045
Fut. ROA	+	.093	.029	.109	3.240	.001
Australia		-4.916	.566	-.273	-8.689	.000
Energy		4.065	6.689	.152	.608	.544
Goods		4.319	6.672	.202	.647	.518
Industrial		6.325	6.676	.300	.947	.344
Investment		6.747	6.664	.338	1.013	.312
Primary		6.339	6.693	.228	.947	.344
Services		6.588	6.664	.354	.988	.323
AR Chair		5.948	.615	.310	9.676	.000
AR CSR		-5.510	.958	-.176	-5.752	.000
AR Notes		-3.078	.574	-.172	-5.363	.000

The variables MV NZD, Profit Margin and Future Profit Margin all have expected directions and as such are 1-tailed significance levels, the remaining variables are 2-tailed.

5.3.2 Thematic

The second theoretical linear model constructed is concerned with the thematic content of disclosures. Equation 6 (below) presents the model with thematic being one of the various thematic indicators.

Equation 6: Theoretical Thematic Linear Regression Model

$$\text{Thematic} = \alpha + \beta1\ (\text{Profit}) + \beta2\ (\text{Fut. Profit}) + \beta3\ (\text{Current}) + \beta4\ (\text{Solvency}) + \beta5\ (\text{Size}) + \beta6\ (\text{Ann. Chair}) + \beta7\ (\text{Ann. CSR}) + \beta8\ (\text{Ann. Disc.}) + \beta9\ (\text{Ann. Notes}) + \beta10\ (\text{CSR open}) + \beta11\ (\text{CSR Main}) + \beta12\ (\text{Energy}) + \beta13\ (\text{Goods}) + \beta14\ (\text{Industrial}) + \beta15\ (\text{Invest./Fin.}) + \beta16\ (\text{Primary}) + \beta17\ (\text{Services}) + \beta28\ (\text{Australia}) + e$$

As was the case with the readability models initial testing revealed issues with collinearity between the six industry control variables but also with the disclosure types. To address this issue model construction was completed utilising three blocks. The first block included the predictor and control variables in the above model from β1 through to β5 (inclusive); these variables were included utilising the 'enter' method whereby they are all forced into the model. The second block of variables represented the six disclosure types and the six industry types; these were entered via the 'stepwise' method with 0.05 entry and 0.10 exit criteria imposed. The third and final block contained the variables Australia and Flesch, which were included via the standard 'enter' method.

Tables 22 through to 28 on the following pages presents the results of this theoretical model applied to the data set. All of these models were statistically significant at the .001 level. As a means of evaluating the validity of the significance tests, the standardised residual plots are included as appendix 5.

The first thematic model is for the variable Activity (in table 22 on the following page). This model was the weakest thematic model, capable of explaining just 2% of the variance in Activity keywords; it also had the poorest normality of residuals (see appendix 5).

Table 22: Activity Linear Model
(F value 2.336, Adj. R^2 .018)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	50.474	.810		62.288	.000
Profit Margin	-5.438E-6	.000	-.027	-.743	.458
Fut. Profit Margin	-3.324E-6	.000	-.016	-.441	.660
Leverage	.034	.115	.012	.300	.764
Solvency	-.011	.007	-.065	-1.709	.088
MV NZD (Size)	1.246E-12	.000	.007	.181	.857
CSR Open	1.448	.621	.084	2.330	.020
CSR Main	1.263	.590	.077	2.141	.033
AR CSR	1.011	.601	.061	1.682	.093
Investment/Finance	-.763	.378	-.073	-2.016	.044
Australia	-.025	.372	-.003	-.068	.946

2-tailed significance levels.

The model found two disclosure control variables and one industry control significant at .05 levels. The betas suggest that CSR disclosures typically had greater use of language representing change, implementation of new ideas or avoidance of inertia, with CSR reports' opening letters and main section both reaching significance and positive betas of 1.45 and 1.26 respectively. Annual reports' CSR sections meet the entry requirements of the model but failed to meet significance, nonetheless it also had a positive beta of 1.01.

Investment/finance industry classification was also significant in the model. With a negative beta of .763, the model suggests that a disclosure from companies in this industry contains almost one less Activity keyword per 500-words.

The Optimism linear model (table 23 on the following page) is one of the strongest models constructed, capable of explaining 44% of the variance in the use of Optimism keywords and has an f value of 52.94. Solvency was the only non-disclosure or industry variable to reach significance in the model with a beta suggesting that companies that were more solvent tended to use more Optimism keywords. Similar to the Activity model, Optimism was positively related to all CSR disclosures suggesting the highest levels of endorsing language could be found in such disclosures with betas suggesting CSR opening letters, main sections and annual report CSR sections contained 3, 1 and 2 additional keywords per 500-words respectively. Likewise, annual reports' chairman letter had a positive relationship with a beta suggesting these disclosures contained 3 additional Optimism keywords per 500-words.

Annual reports' financial notes were the final significant predictor with a negative beta that suggests these disclosures contained almost one less keyword per 500-words.

Table 23: Optimism Linear Model
(F value 52.94, Adj. R^2 .440)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	50.090	.381		131.564	.000
Profit Margin	4.717E-6	.000	.040	1.481	.139
Fut. Profit Margin	-1.805E-6	.000	-.015	-.550	.583
Leverage	-.062	.049	-.037	-1.257	.209
Solvency	.007	.003	.072	2.513	.012
MV NZD (Size)	1.311E-13	.000	.001	.044	.965
AR Chair	3.111	.192	.535	16.180	.000
CSR Open	3.184	.288	.319	11.070	.000
AR CSR	2.252	.279	.237	8.060	.000
AR Notes	-.831	.176	-.153	-4.733	.000
CSR Main	.749	.275	.079	2.725	.007
Australia	-.051	.163	-.009	-.315	.753

2-tailed significance levels.

Certainty's linear model (table 24) discovered four statistically significant predictors, three at .01 and two at .05 levels. The model achieved moderate success being capable of explaining 25.2% of the variance in Certainty keywords with an f value of 25.34.

Table 24: Certainty Linear Model
(F value 25.34, Adj. R^2 .252)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	52.707	.762		69.148	.000
Profit Margin	-2.962E-6	.000	-.015	-.462	.644
Fut. Profit Margin	-2.435E-6	.000	-.012	-.371	.711
Leverage	-.075	.097	-.026	-.766	.444
Solvency	7.069E-5	.006	.000	.012	.990
MV NZD (Size)	-7.686E-12	.000	-.042	-1.301	.194
AR Notes	3.937	.336	.424	11.720	.000
AR Disc	3.063	.326	.328	9.406	.000
CSR Open	-1.310	.554	-.077	-2.366	.018
Primary	-1.173	.469	-.080	-2.501	.013
Australia	-.348	.322	-.037	-1.080	.280

2-tailed significance levels.

The positive betas suggest that annual reports' discussion sections and financial notes contained higher levels of language that denoted resoluteness, inflexibility and was written in an ex cathedra style. These disclosures contained three and four more keywords (per 500)

than the typical disclosure respectively. Meanwhile, CSR reports' opening letters contained around one less keyword per 500 suggesting these disclosures are written in language that is more flexible.

Realism (table 25 below) had four significant predictors, all at .01 levels with an adjusted R^2 value suggesting 28.4% of the variance in Realism keywords could be explained by the model. Annual reports' opening letters and CSR reports' opening letters were positively related to Realism. Negative relationships were significant with CSR reports' main sections and Australian disclosures.

Table 25: Realism Linear Model
(F value 32.57, Adj. R^2 .284)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	41.339	.523		78.969	.000
Profit Margin	-2.546E-6	.000	-.016	-.537	.592
Fut. Profit Margin	-8.600E-6	.000	-.055	-1.759	.079
Leverage	-.018	.073	-.008	-.244	.807
Solvency	-.001	.004	-.009	-.279	.781
MV NZD (Size)	-6.789E-12	.000	-.048	-1.518	.129
AR Chair	1.294	.261	.169	4.951	.000
CSR Open	2.377	.407	.181	5.839	.000
CSR Main	-2.048	.387	-.164	-5.293	.000
Australia	-.886	.242	-.123	-3.665	.000

2-tailed significance levels.

The betas for these relationships suggest that Annual reports' opening letters and CSR reports' opening letters emphasised tangible, immediate and recognizable matters that affect people's everyday lives more than the average disclosure, while CSR reports' main sections tended to use less of this language. The final relationship suggests that New Zealand listed companies used more Realism keywords, with .886 additional keywords per 500-words compared to Australia.

Commonality (shown in table 26 on the following page) is the final DICTION variable investigated. This was the second weakest model constructed capable of explaining just 2.9% of the variance in Commonality keywords. It had three variables reach significance all of which had positive relationships.

Table 26: Commonality Linear Model
(F value 3.340, Adj. R^2 .029)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	53.157	.976		54.443	.000
Profit Margin	1.259E-6	.000	.006	.156	.876
Fut. Profit Margin	7.767E-6	.000	.034	.932	.351
Leverage	-.034	.127	-.010	-.267	.790
Solvency	.005	.007	.027	.707	.480
MV NZD (Size)	-1.407E-13	.000	.000	-.019	.985
AR Notes	1.628	.418	.155	3.898	.000
AR Disc	1.183	.405	.113	2.920	.004
Investment/Finance	.867	.417	.074	2.080	.038
Australia	-.423	.413	-.040	-1.024	.306

2-tailed significance levels.

Annual reports' discussion sections and financial notes were both significant at .01 levels. The betas suggest that these disclosures had 1.2 and 1.6 additional keywords per 500-words that highlighted agreed upon values of a group or helped minimise any idiosyncratic views. Likewise, companies operating in investment or finance based industries tended to have .87 additional keywords per 500-words.

The last two thematic indicators, positive and negative also include the Flesch score as a predictor as this will is used to assess hypothesis 2c which adds to the literature by combining readability and thematic research to test whether positive and negative disclosures are related to readability. Positive's model (shown in table 27 on the following page) achieved good strength, being capable of explaining 47.5% of the variance in positive keyword use. The model identifies three disclosure types, one industry and readability significant predictors for the number of positive keywords.

The three disclosure relationships were all significant at .01 levels and suggest annual reports' chairman letters were the most positive disclosure with an additional 8.7 positive words per 500-words. CSR reports' opening letters had the second largest use of positive keywords with 4.7 additional words and finally annual reports' CSR sections with 3.6 additional positive words.

Also with a .01 significance level, the model finds companies operating in the primary industry tended to contain 1.4 additional positive keywords (per 500-word sample).

Table 27: Positive Linear Model
(F value 66.32, Adj. R^2 .475)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	1.688	.773		2.182	.029
Profit Margin	9.406E-6	.000	.036	1.339	.181
Fut. Profit Margin	1.202E-5	.000	.045	1.668	.096
Leverage	-.050	.107	-.013	-.469	.639
Solvency	-.003	.006	-.014	-.499	.618
MV NZD (Size)	-3.072E-12	.000	-.013	-.474	.636
AR Chair	8.733	.375	.671	23.286	.000
CSR Open	4.682	.590	.209	7.934	.000
AR CSR	3.558	.566	.168	6.286	.000
Primary	1.396	.514	.073	2.716	.007
Flesch	.042	.021	.061	2.002	.023
Australia	.488	.352	.040	1.388	.166

Flesch is 1-tailed significance as expected to have positive relationship, all others are 2-tailed.

The final significant predictor discovered by the model is readability at a .05 level. The beta suggest that disclosures that were easy to read contained more positive keywords while hard to read disclosures contained less positive keywords. As was expected, this would suggest that a manipulation is present, with managers attempting to obfuscate less positive news.

Table 28: Negative Linear Model
(F value 9.433, Adj. R^2 .096)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	.753	.294		2.559	.011
Profit Margin	-2.548E-6	.000	-.034	-.998	.319
Fut. Profit Margin	-8.663E-7	.000	-.012	-.329	.742
Leverage	-.017	.039	-.016	-.419	.675
Solvency	-.001	.002	-.019	-.514	.607
MV NZD (Size)	3.156E-13	.000	.005	.132	.895
AR Chair	1.262	.146	.344	8.657	.000
AR Notes	.637	.128	.186	4.970	.000
CSR Main	.469	.212	.078	2.209	.027
Flesch	.001	.008	.003	.071	.472
Australia	-.099	.130	-.029	-.762	.446

Flesch is 1-tailed significance as expected to have negative relationship, all others are 2-tailed.

Negative word use (shown in table 28 above) was another weak model with an adjusted R^2 value of .096 suggesting just 9.6% of the variance in negative keywords could be accounted for by the models predictor variables. Three predictor variables reached significance, all of which were disclosure classification variables. Annual reports' chairman letters and financial

notes both achieved significance levels of .01 and both had positive relationships. Their betas suggesting that these disclosures contained 1.3 and .6 additional negative keywords per 500-words respectively. CSR reports' main sections were the other significant disclosure type, achieving a .05 significance level. Also having a positive relationship the beta suggests that these disclosures contained half an additional keyword per 500-word sample.

A Note on Profitability Sensitivity

Following the same sensitivity approach used in the readability models the above models were re-constructed two times substituting profit margin and future profit margin with their ROA and ROE counterparts. In these additional models, none of the profitability indicators achieved any significance and no other predictors were materially affected. Due to space restrictions and a lack of any significant changes these additional models are not included in this thesis.

6. Discussion / Conclusions

6.1 Hypotheses: Reject or Not?

Figure 5 (below) presents the various null hypotheses of this research. In the results chapter above an extensive amount of tests and results are available for assessing whether these null hypotheses can be rejected and thus support the alternative hypotheses from chapter 3.3.2.

Figure 5: Complete List of Null Hypotheses

H1a $_{Null}$: [Determinant] is not related to the readability of disclosures.

H1b $_{Null}$: [Determinant] is not related to the thematic content of disclosures.

Determinant
Size
Leverage/Solvency
Industry
Disclosure Type
Country

Where the direction is unknown the hypothesis is testing for any relationship (i.e. direction is blank).

H2a $_{Null}$: A company's profitability is not related to the readability of its disclosures.

H2b $_{Null}$: The thematic content of company's disclosures is related to the company's profitability.

H2c $_{Null}$: Disclosures with positive content have the same reading level as disclosures with negative content.

H3a $_{Null}$: There is no statistically significant difference between the readability of regulated and unregulated disclosures.

H4a $_{Null}$: There is no statistically significant differences in the thematic content of CSR reports and annual reports.

H4b $_{Null}$: There is no statistically significant differences in the readability of CSR reports and annual reports.

The hypotheses can be split into three basic sub-groups. The first group of hypotheses concerned with identifying significant relationships between the independent variables and

the readability of disclosures. The second concerned with identifying significant relationships between the independent variables and the thematic content of disclosures. The final group is concerned with the differences between disclosures. Table 29 summarises the relationships discovered with the primary readability indicator, the Flesch score, as well as any additional relationships found by the various sensitivity tests (excluding profitability, which is discussed later).

Table 29: Significant Readability Relationships (Exc. Profit)

	Bi-variate Relationships	Multivariate Relationships
Main Model (Flesch)	AR Chair (+), AR Services (+), MV (-), Australia (-), AR CSR (-), AR Notes (-), Goods (-)	AR Chair (+), AR CSR (-), AR Notes (-), Australia (-)
Additional (Sensitivity)	CSR Main (+), Services (-)	CSR Main (+), AR Disc (-)

Positive relationships imply that as the variable increases the disclosures readability also increases

Considerably more variables were related to readability under bi-variate testing compared to the multivariate models. The typical relationships discovered were disclosure types, country of listing, industry of operations and company size (MV). Under the more stringent multivariate testing only disclosure type and country of listing appeared significant. The models revealed that Australian listed companies typically had more complicated disclosures. Meanwhile all but one of the disclosure types was identified as a significant predictor of readability in models. Based on these findings two null hypotheses can be rejected and the following alternative hypotheses accepted.

$H1a_{1\ Alternative}$: Australian disclosures are negatively related to readability.

$H1a_{2\ Alternative}$: Disclosure types are related to readability.

Regarding company size, leverage, solvency and industry there is insufficient evidence to reject the null hypotheses that they are not related to readability.

Table 30 (on the following page) provides a ranking for the disclosures tested in this research based on the multivariate models. In addition to the ranking, an average grade implication is shown which is converted to a number of weeks education. Annual reports' financial notes were the most complicated disclosures requiring 52 weeks additional education to read effectively (from the base score of zero weeks). The most readable disclosures were annual

reports' chairman letters, CSR reports' main sections, and finally CSR reports' opening letters; each requiring 25, 21 and 0 weeks less education respectively.

Table 30: Disclosure Readability Rankings and Implications

	Readability Ranking	Times Significant in Models	Average Readability Grade	Average Weeks Education
AR Chairman Letter	1	2/4	-.66	-25
CSR Main	2	1/4	-.55	-21
CSR Report Opening	3	0/4	0	0
AR Discussion	4	2/4	.77	29
AR CSR Sections	5	3/4	.79	30
AR Financial Notes	6	4/4	1.36	52

Note: the average reading grade is based on models where the variable was significant and the average week's education is based on an academic year containing 38 weeks of study.

Interpretation of the rankings reveals some interesting results. They show how the models typically found disclosures from CSR reports to be more readable than disclosures from annual reports; with the only exception being annual reports' chairman letters. This finding allows me to reject the null hypothesis 4b and conclude that alternative hypothesis is correct.

H4b $_{Alternative}$: CSR reports' disclosures have better readability than annual reports' disclosures.

The model's rankings also reveal that more regulated disclosures such as annual reports' financial notes and discussion/analysis sections were in the lower rankings whereas the unregulated opening letters and CSR reports resided in the more readable ranges. Based on this finding there is sufficient evidence to reject null hypothesis 3a and confirm the alternative hypothesis, further more I can suggest that regulated disclosures are less readable than unregulated disclosures.

H3a $_{Alternative}$: There is a statistically significant difference between the readability of regulated and unregulated disclosures.

The final readability hypothesis is concerned with any relationship between profitability and readability. Table 31 (on the following page) provides a summary of what correlations and relationships were found between readability and profitability. Under the obfuscation hypothesis, it is expected that poor financial performance will be associated with poor readability in disclosures and visa-versa. Once again, considerably more relationships were significant under bivariate testing compared to the multivariate models. The relationships

found were all consistent in direction implying that as profitability increased the readability of disclosures increased (e.g. the Flesch score increases or grade levels, such as Fog, decreased) and visa-versa.

Table 31: Significant Relationships between Readability and Profitability

	Bi-variate Relationships	Multivariate Relationships
Readability	Profit, (+), Fut. Profit (+), ROA (+), Fut. ROA (+), ROE (+), Fut. ROE (+)	ROA (+), Fut. ROA (+), Fut. ROE (+)

Positive relationships imply that as the variable increases the disclosures readability increases. 1-Tailed significance of .05 and greater used to populate table.

ROA was the only current year profitability indicator to gain significance in multivariate tests despite all current year profitability indicators gaining significance in bi-variate correlations. The failure of both net profit margin and ROE to gain significance in multivariate means I cannot reasonably reject null hypothesis 2a. Interestingly, two of the three future profitability indicators gained significance in multivariate tests. As discussed by Abrahamson and Amir (1996), this could suggest that managers were attempting to overcome information asymmetries by providing useful incremental information about future earnings prospects rather than evidence of impression management. However, they were dealing with a relationship between future profitability and negative themes. Here, were the relationship is with readability, such a relationship could suggest companies use complicated disclosures to disguise poor future earnings news in disclosures but there is insufficient evidence to say for sure what is going on.

Hypothesis 1b is concerned with identifying if any of the independent variables are related to the thematic content of disclosures. Using table 32 (on the following page), which summarises the relationships discovered with the various thematic indicators and the independent variables (excluding profitability), all variables had a significant bi-variate correlation with at least one of the thematic variables. Size was correlated with three thematic variables: leverage, none; solvency, one; industry, three; disclosure type, seven; and finally country, one. Under the multivariate models size was related to no thematic variable: leverage, none; solvency, one; industry, four; disclosure type, seven; and county, one.

Table 32: Significant Thematic Relationships (Exc. Profit)

Variable	Bi-variate Relationships	Multivariate Relationships
Activity	Solvency (-), AR Disc. (-), AR Notes (-), Investment/Financial (-), MV (+), CSR Open (+), CSR Main (+), AR CSR (+), Goods (+), Australia (+)	CSR Open (+), CSR Main (+), Investment/Finance (-)
Certainty	MV (-), CSR Open (-), CSR Main (-), AR Chair (-), AR CSR (-), Primary (-), AR Disc (+), AR Notes (+), Services (+)	AR Notes (+), AR Disc (+), CSR Open (-), Primary (-)
Commonality	CSR Open (-), AR Chair (-), CSR Main (-), AR Disc (+), AR Notes (+)	AR Notes (+), AR Disc (+), Investment/Finance (+)
Optimism	AR Disc. (-), AR Notes (-),CSR Open (+), AR Chair (+), AR CSR (+)	Solvency (+), AR Chair (+), CSR Open (+), AR CSR (+), AR Notes (-), CSR Main (+)
Realism	MV (-), CSR Main (-), AR Disc (-), AR CSR (-), AR Notes (-), Australia (-), CSR Open (+), AR Chair (+)	AR Chair (+), CSR Open (+), CSR Main (-), Australia (-)
Negative	Certainty (-), AR Disc (-), AR CSR (-), AR Chair (+), AR Notes (+)	AR Chair (+), AR Notes (+), CSR Main (+)
Positive	AR Disc (-), AR Notes (-), CSR Open (+), AR Chair (+), AR CSR (+), Primary (+)	AR Chair (+), CSR Open (+), AR CSR (+), Primary (+)

Based on the multivariate tests the null hypothesis 1b can be rejected for the independent variables solvency, industry, disclosure type and county of listing.

H1b $_{\text{Alternative}}$: Solvency is related to the thematic content of a company's disclosures.

H1b $_{\text{Alternative}}$: Industry is related to the thematic content of a company's disclosures.

H1b $_{\text{Alternative}}$: Disclosure type is related to the thematic content of a company's disclosures.

H1b $_{\text{Alternative}}$: Country of listing is related to the thematic content of a company's disclosures.

However, the null hypotheses for size and leverage cannot be rejected.

Table 33 (on the following page) provides the relationships between the various thematic variables and profitability indicators. Activity was the only thematic variable related to profitability and those relationships were only present in bi-variate tests. In multivariate models, no thematic variable had a relationship with profitability. However, as the Activity linear model was weak and had poor residual plots I place greater significance on the bi-variate results and as such cannot reject the null hypothesis 2b in regards to the thematic variable Activity.

Table 33: Significant Relationships between Thematic Content and Profitability

Variable	Bi-variate Relationships	Multivariate Relationships
Activity	ROA (+), Fut. ROA (+), ROE (+), Fut. ROE (+), Fut. Profit (+)	None
Certainty	None	None
Commonality	None	None
Optimism	None	None
Realism	None	None
Negative	None	None
Positive	None	None

However, there is sufficient evidence to reject null hypotheses 2b for the remaining thematic variables as no relationships were found between them and profitability indicators at either bi-variate or multivariate levels.

H2b $_{Alternative}$: The Certainty theme of company's disclosures is not related to profitability.

H2b $_{Alternative}$: The Commonality theme of company's disclosures is not related to profitability.

H2b $_{Alternative}$: The Optimism theme of company's disclosures is not related to profitability.

H2b $_{Alternative}$: The Realism theme of company's disclosures is not related to profitability.

H2b $_{Alternative}$: The Negative theme of company's disclosures is not related to profitability.

H2b $_{Alternative}$: The Positive theme of company's disclosures is not related to profitability.

As Sydserff and Weetman (2002) comment poor preforming companies can use impression management to make their narratives resemble the verbal tone and themes of high performance companies. This research's results suggest that this may be happening, the findings show all but one of the thematic variables have no relationship with profitability. The negative and positive variables provide the strongest evidence of this mimicking tendency as

these two counts should theoretically vary depending on the profitability of a company, yet clearly do not.

As mentioned in chapter 3.2 this research is the first to be able to combine thematic and readability analysis to test whether the readability of a disclosure is related to the number of positive or negative keywords in a disclosure. This hypothesis is essentially an alternative to the traditional manipulation hypothesis that suggests manipulation is present when there is a relationship with profitability. If manipulation is present then disclosures that have poor readability should contain more negative keywords and less positive, and likewise disclosure that are more readable should have more positive keywords and less negative. This hypothesis offers a significant advantage over the typical hypothesis as it isn't dependent of financial performance and can suggest manipulation even in well preforming companies by comparing the readability of their positive disclosures and the negative disclosures.

Table 34 below provides a summary of the relationships between the Flesch score (readability) and both positive and negative thematic variables. Under bi-variate tests, readability was correlated with both thematic variables in positive directions; however, multivariate tests, found a positive relationship with just positive keywords. This result suggests that disclosures that contained more positive keywords (i.e. had a more positive theme) were more readable than disclosures with less positive keywords. This provides sufficient evidence to reject null hypothesis 2c and support the alternative hypothesis

H2c $_{\text{Alternative}}$: Disclosures with positive content are more readable than disclosures with negative content.

Table 34: Positive and Negative Themes Relationships with Flesch Score

	Bi-variate Relationships	Multivariate Relationships
Positive	Flesch (+)	Flesch (+)
Negative	Flesch (+)	None

As specific directions were expected 1-Tailed significance of .05 and greater are used to populate table.

The last hypotheses of this research tests whether there is any difference in the thematic content and readability of CSR reports and annual reports. The easiest way to tests these differences is to use the Mann-Whitney U test with grouping based on the disclosure being in

CSR reports or the annual report. Table 35 (below) presents the results of this test as applied to readability. As found earlier in comparisons of disclosures based on a ranking, it was expected that CSR reports would be more readable than annual reports.

Table 35: Readability; CSR Reports versus Annual Reports

	Flesch	Flesch Kincaid	Fog	Smog
Mann-Whitney U	39667	35141	30530	27937
Wilcoxon W	287827	41696	37085	34492
Z	-.197	-2.131	-4.102	-5.211
Significance (1-tailed)	.422	.017	.000	.000
CSR Reports Ranks[2]	Insignificant	Lower	Lower	Lower

As a specific direction was expected 1-tailed significance criteria is used with the results showing a statistically significant difference in the reading levels of CSR reports and annual reports on all but the Flesch score. As expected the significant findings all suggested CSR report's disclosure were more readable than annual report's disclosures. This finding further supports the earlier evidence used to reject the null hypothesis 4b.

Table 36 (below) provides the results of this test applied to the thematic variables. Unlike the readability results shown above, as no specific direction was expected for thematic content of disclosures the significance tests used in this table are 2-tailed.

Table 36: Thematic Content; CSR Reports versus Annual Reports

Panel A	Activity	Optimism	Certainty	Realism
Mann-Whitney U	20938	27255	22055	38598
Wilcoxon W	269098	275415	28610	45153
Z	-8.199	-5.500	-7.722	-.654
Significance (2-tailed)	.000	.000	.000	.513
CSR Reports Rank	Higher	Higher	Lower	Insignificant

Panel B	Commonality	Positive	Negative
Mann-Whitney U	29794	34733	38080
Wilcoxon W	36349	282894	44635
Z	-4.415	-2.305	-.877
Significance	.000	.021	.381
CSR Reports Rank[2]	Lower	Higher	Insignificant

[2] This variable indicates whether the test found CSR reports' score in the readability formula to be higher (more readable) or lower (less readable).

The results reveal that annual reports and CSR reports were significantly different on all but two of the thematic indicators. CSR reports had higher use of language captured by the thematic variables Activity, Optimism and positivity. Meanwhile annual reports had higher use of language indicated by the thematic variables Certainty and Commonality. This allows me to reject null hypothesis 4a and confirm the alternative.

H4a $_{\text{Alternative}}$: There is statistically significant differences in the thematic content of CSR reports and annual reports.

6.2 Score Disclosure Readability: A Suggestion

Previous research has shown the readability of companies' disclosures are generally very poor. Similarly, this research found the average reading grade as suggested by the Flesch, Flesch Kincaid, Fog and Smog formulae to be extremely poor. Table 37 below shows a summary of the readability results including data on education levels of New Zealanders from the 2006 census and what these would imply regarding the proportion of individuals that could read such disclosures (the complete census data table is available as appendix 6; unfortunately similar data from Australia was unavailable at the time of writing).

Table 37: Readability Summary Statistics

	Mean	Minimum Required Education Level	% Population
Flesch	29.13	Bachelor Degree and Level 7 Qualification	16%
Flesch Kincaid	15.05	Post-graduate and Honours Degrees	5%
Fog	18.31	Master's Degree	2%
Smog	16.24	Post-graduate and Honours Degrees	5%

Interpreting the mean readability scores with the census data reveals that as little as 2% of New Zealand's population would be able to effectively read and understand disclosures. The average result, while providing a more positive result, would suggest that 93% of New Zealanders would not be able to read the disclosures effectively and therefore would be likely to make inefficient investment decisions. As discussed in chapter 2 this is not a desirable situation for capital markets.

The issue that a lot of research seems to overlook is how to improve the readability of disclosures, something many groups have commented on the need for, including the US SEC. This was not the aim of this research however; I do provide one suggestion for achieving improvements. Similar to what is used in many CSR reports, incorporating a scoring system may improve disclosures by shaming poor performers into making improvements or allowing investors to easily identify good performers and reward them with investment. In CSR reports, the use of G3 guidelines provides a means for users to compare the CSR disclosures of one company to another with a simple grade level providing an overview on the quality of the CSR disclosures. A similar approach could improve disclosures readability by grading their

readability and ease of use. However, such a system would have to be easy to incorporate into reporting for companies while also allowing for easy verification by the public, something current reading formulae do not allow.

A key issue with readability formulae is their complicated calculation when a standalone program is not used and their misleading or irrelevant outputs. In the following two sections, I first test a simplified readability evaluation variable and then derive a formula that uses this variable to evaluate disclosures readability and outputs a simple and comparable result.

6.2.1 Simplified Readability Proxy: Average Word Size

In this section I test whether the average word size (in characters) is an appropriate substitute for readability formulae when there is no need to infer a grade level but rather simply represent the reading difficulty of the text. Theoretically, it relies on the assumption that smaller words are easier to read. This would be easier to use as all word processing programs can provide this value as an output and most members of the public should have access to these programs. There is of course a trade-off for this simplicity as it is likely that it will not be as accurate as the readability formula that account for additional complexity elements such as the number of syllables in words.

Table 38 on the following page presents the descriptive statistics for the average word size (in characters) across the six different disclosures investigated. The disclosures all recorded very similar means, ranging from 5.22 characters (chairman letters) through to 5.64 characters (annual report CSR sections). Unsurprisingly, Mann–Whitney U test found no significant difference in the various means.

Table 38: Average Word Size Descriptive Statistics

	N	Minim.	Maxim.	Range	Mean	Std. Dev.
AR CSR	59	4.93	6.24	1.31	5.6403	.21025
Chair	188	4.67	6.02	1.35	5.2262	.20726
CSR Open	54	4.91	5.95	1.04	5.3841	.22794
CSR Main	60	4.88	6.11	1.23	5.5082	.20450
Disc	230	4.71	6.10	1.39	5.4018	.16230
Notes	233	5.00	5.73	0.73	5.4081	.11465
All	824	4.67	6.24	1.57	5.3872	.20498

Table 39 (below) provides a summary of the significant bi-variate correlations. In general, the correlations with average word size were the same as the readability formulae. Results suggested that word size was positively correlated with Activity, Certainty, Commonality, company size, CSR reports' main sections, annual reports' CSR and notes sections, and finally Australian classification. Meanwhile negative correlations existed with Optimism, Realism, positive and negative word use, readability, solvency, and finally annual reports' chairman letters. Unlike the readability formulae, no correlations were found with profitability or industry classification.

Table 39: Bi-variate Correlation Summary

Variable	Spearman's rho correlation	Kendall's tau correlation
Average Word Size	**Activity (.153), Optimism (-.128), Certainty (.162), Realism (-.556), Commonality (.178), Positive (-.203), Negative (-.153), Flesch (-.800), Flesch Kincaid (.574), Fog (.529), Smog (.526), MV (.215), Solvency (-.102), CSR Main (.172), AR Chair (-.421), AR CSR (.320), Aus. (.329)** AR Notes (.076)	**Activity (.105), Optimism (-.085), Certainty (.112), Realism (-.396), Commonality (.119), Positive (-.130), Negative (-.108), Flesch (-.630), Flesch Kincaid (.415), Fog (.380), Smog (.383), MV (.148), Solvency (-.068), CSR Main (.142), AR Chair (-.347), AR CSR (.264), Aus. (.271)** AR Notes (.062)

Correlations in bold were found statistically significant at the .01 level, else significant at the .05 level

Applying the same methods as used in the original liner regression models a linear regression model was created for word size with table 40 (on the following page) providing the model's results. The model achieved a high level of significance with an F value of 23.989 and an adjusted R^2 of .456 suggesting 45.6% of the variation in average word size was explained by the model's predictor variables.

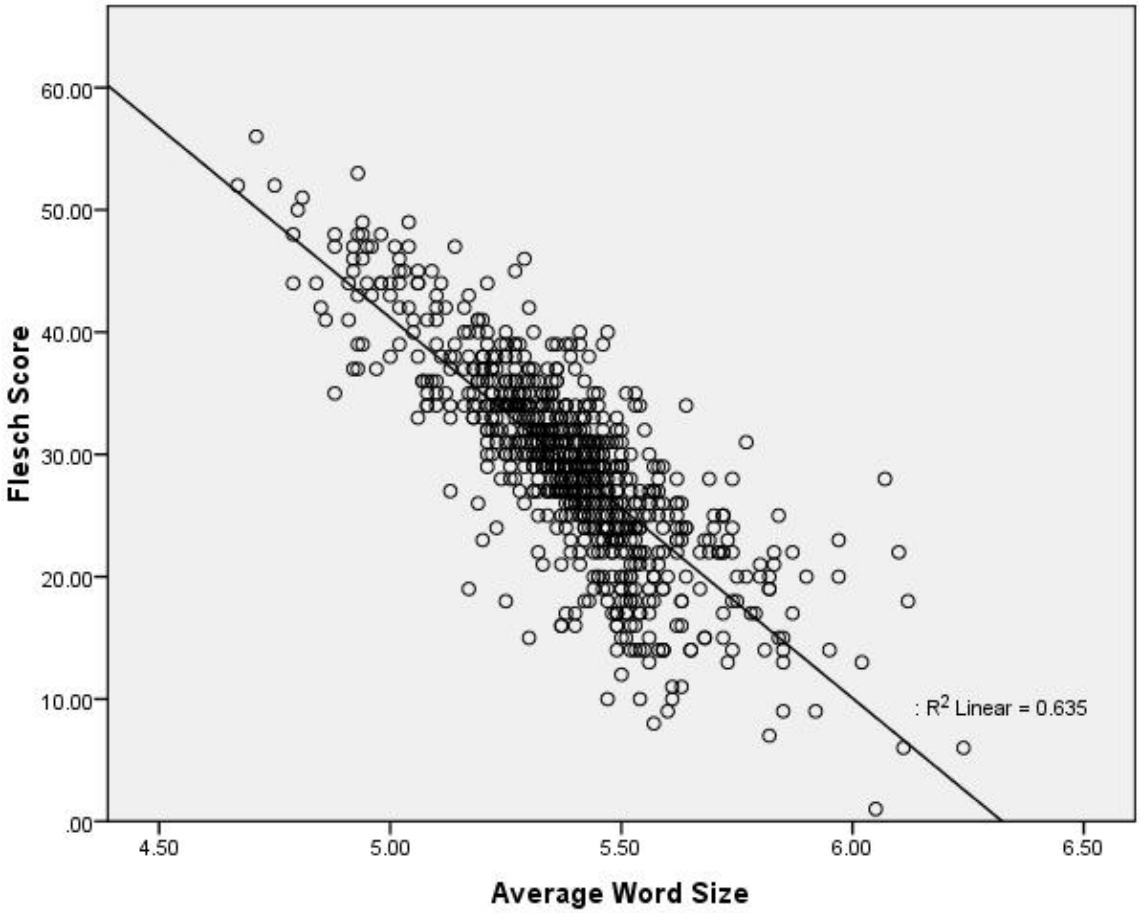
The significant predictor variables of the model were in common with the Flesch model. Importantly, the implications of all betas were consistent with the results from the original readability formulae suggesting it may be a viable substitute.

Table 40: Average Word Size Linear Model
(F value 23.989, Adj. R^2 .456)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	5.969	.279		21.390	.000
Activity	.005	.001	.097	3.339	.001
Optimism	.007	.003	.087	2.111	.035
Certainty	.004	.002	.081	2.540	.011
Realism	-.025	.002	-.387	-12.599	.000
Commonality	-.003	.001	-.058	-1.933	.054
Positive	-.001	.002	-.037	-.896	.371
Negative	.002	.004	.017	.563	.574
MV NZD	-1.006E-13	.000	-.011	-.383	.702
Profit Margin	4.007E-7	.000	.040	1.459	.145
Fut. Profit	2.386E-8	.000	.002	.084	.933
Current	-.007	.004	-.049	-1.610	.108
Solvency	.000	.000	-.054	-1.783	.075
CSR OPEN	-.006	.030	-.007	-.209	.835
CSR MAIN	.009	.027	.011	.332	.740
AR CHAIR	-.134	.023	-.273	-5.906	.000
AR CSR	.168	.029	.209	5.838	.000
AR DISC	-.019	.016	-.042	-1.250	.212
AR Notes	.021	.016	.045	1.340	.181
Australia	.058	.014	.122	4.127	.000
Energy	-.075	.155	-.110	-.486	.627
Goods	-.073	.154	-.134	-.476	.634
Industrial	-.112	.155	-.205	-.723	.470
Investment	-.111	.154	-.216	-.719	.473
Primary	-.050	.155	-.070	-.325	.745
Services	-.091	.154	-.191	-.591	.554

As the intention is for the average word size to act as a simplified alternative to the readability formulae, an additional linear model tested the ability of the average word size to predict the readability of disclosures as measured by the Flesch score. Figure 6 (on page 78) presents a scatter plot of the Flesch score against the average word size. The plot appears to follow a linear relationship with the linear trend line obtaining a R^2 value of .635 suggesting that 63.5% of the variation in Flesch score was explained by the variation in average word size.

Figure 6: Flesch Score vs Average Word Size Scatter Plot



The linear model (shown in table 41 below) suggests that each additional character in the average word size results in the Flesch score decreasing 31 points; a large amount given that the Flesch score is designed to range from 0 through to 100. Interpretation would suggest that the maximum readability score would be obtained when the average word is just 3.11 characters long; whereas the minimum or poorest readability score is obtained when the average word is 6.32 characters. The strength of this model suggests that while not a prefect substitute for readability formulae, word size appears to capture similar elements and could be used as a simple evaluation of reading ease.

Table 41: Flesch Score Linear Model (Average Word Size)
(F value 1431.550, Adj. R^2 .635)

	Un-Standardised		Standardised		
	Beta	Error	Beta	t	Sig
(Constant)	196.716	4.433		44.380	.000
Average Word Size	-31.109	.822	-.797	-37.836	.000

6.2.2 Grading average word size

Whereas readability formulae attempt to grade texts' readability as an education level required to read the text effectively, the aim of this grading formula is to grade corporate disclosures against one another. To do this I utilise the standard score formula (Z score formula). Equation 7 illustrates the typical standard score formula where Z is the standardised score, x is the value to be standardised, μ is the mean and σ is the standard deviation.

Equation 7: Standard Score Formula

$$Z = \frac{x - \mu}{\sigma}$$

I modify this formula by first substituting the mean and standard deviation with values based on my data set of 824 corporate disclosures and 7,507,598 words in total. Next, the value to be standardised is replaced with AWS (an acronym for average word size) and the standardised score (Z) with X (the output). Lastly, I want the output to be interpreted as a ranking for readability with the higher a positive value the better a disclosures readability is, relative to the average disclosure. Therefore, I want positive outputs to be obtained from small AWS values and negative scores to be obtained from large AWS values, so a negative conversion is also required. This results in the final grading formula shown below.

Equation 8: Simplified Readability Formula for Disclosures

$$X = {}^{-}\left[\frac{AWS - 5.39}{.205}\right]$$

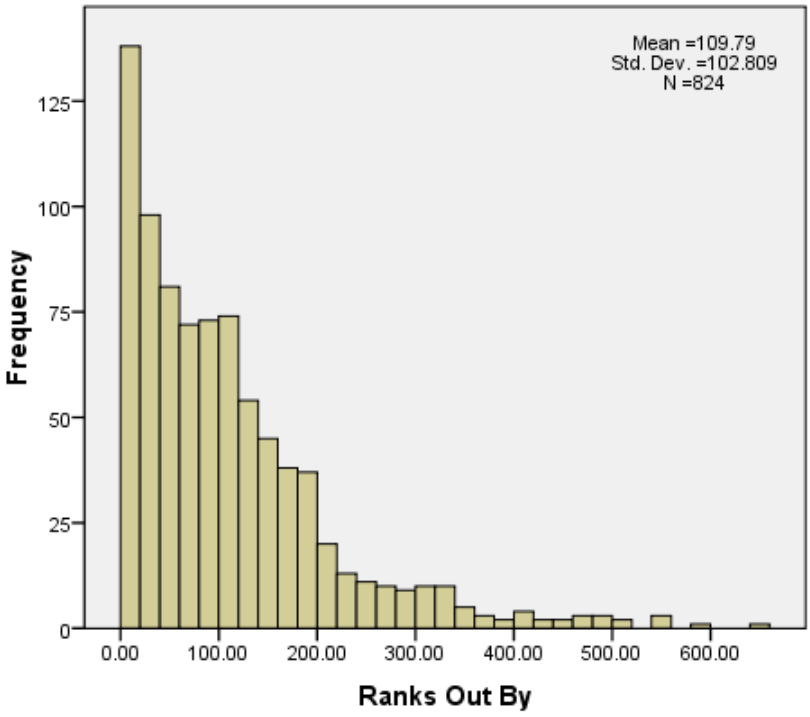
The output of this formula is effectively the standardised result, which can reveal how the evaluated disclosure compares to the average disclosure. The simplest way to interpret such a result is by assigning grades to these scores. To do this you must use some form of conversion table. For this, I use the percentiles from my data set to provide seven ranges that dictate what grade a given score is. This table, included as table 42 on the following page also provides the number of disclosures within my data set that attained that grade. As one would expect, only a small proportion (5.46%) of disclosures obtained the highest-grade level of A. The natural spread of the average word size being bell curved results in the majority of disclosures being in the middle of the spectrum with 65.41% of disclosures scoring a C, D or an E grade.

Table 42: Average Word Size Grading

Grade	Lower band	Upper band	Occurrences	Occurrences %
A	1.80		45	5.46
B	1.22	1.79	39	4.73
C	0.52	1.21	122	14.81
D	0.0	0.51	215	26.09
E	-0.49	-0.01	202	24.51
F	-1.12	-0.50	127	15.41
G		-1.13	74	8.98

To test whether the ranking of this new formula results in the same results as a ranking based on the Flesch score, SPSS was used to create variables that indicated every disclosure's ranking on these two formulas, which then allows for analysis of the differences. The mean difference was 110, suggesting that on average the rankings were out by 13%. Basic percentile analysis reveals that 50% of the rankings were less than 10% out while 90% of the rankings were less than 29% out. Figure 7 (on the following page) provides a graphical representation of how far out the two ranks were.

Figure 7: Graphical Representation of Ranks Deviation



As this simplified formula uses different criteria to score the readability of texts compared to the Flesch score differences are to be expected. However, the formula does manage to give a good approximation of texts reading difficulty and allows for much easier comparison of the readability of one company's disclosures to the estimated population (based on my data set). Creating a new readability formula was not the aim of this research and as such this formula is not suggested as perfect or useable, rather this chapter is meant to discuss the need for such a formula to be developed and attempts to motivate future research to do so (see chapter 9).

6.3 Results of Previous Research versus This Research

Included on following pages are tables 43 and 44. These summarise the findings of previous research on readability (table 43) and thematic content (table 44). They also compare these previous findings to those of this research, identifying any significant differences.

Concerning the ultimate readability of disclosures, the findings of this research were complementary to previous research. Where there were contradicting findings regarded what elements are related to readability. Courtis (1995) found no relationship between readability levels and profitability; Adelberg (1979) found a negative relationship between profitability and reading difficulty; Subramanian et al. (1993) found that disclosures readability was positively related to profitability. My research agrees with the findings of Subramanian et al. (1993), showing disclosures readability was positively related to company performance.

Prior research has conflicting results regarding the impact of company size on the readability of its disclosures. Li (2008) found large companies had less complicated disclosures, opposing this Richards and van Staden (2011) found the large companies had more complicated disclosures. Adding to these mixed results this research found no relationship with company size.

Previous research was consistent concerning any industry dependent differences. Stanga (1976), Li (2008), and Richards and van Staden (2011) all found or suggested that some industries had disclosure that were more of less readable than others. Indeed this research initially discovered some evidence of industry specific differences in readability at bi-variate levels. However, no industry classification was significant once testing progressed to multivariate levels. The differing results are difficult to explain. Research provides the same types of disclosures so that does not appear to be the issue; rather it is likely that there is a difference due to methods approached in testing. Differences in analysis such as the use (or lack thereof) of multivariate tests, the type of bi-variate test (do they assume normality etcetera) or even what indicators are used are likely causes. It is also possible that the varying years the data related to in research is having an impact; unfortunately, no research can conclusively justify such discrepancies.

Table 43: Results of Previous Readability Research versus This Research

Paper	Findings	This Research's Findings	Results Match?
Richards and van Staden (2011)	NZ financial notes readability was beyond 93% of the New Zealand population.	The average Flesch, Flesch Kincaid, Fog and Smog scores were 29, 15, 18 and 16 respectively. Implying that as little as 2% of New Zealand's population would be able to effectively read and understand disclosures. The average readability formula suggests that 93% of New Zealanders would not be able to read the disclosures effectively.	Yes
Courtis (1995)	Hong Kong footnote passages were beyond the comprehension levels of 90% of the adults.		
Courtis (1986)	Canadian disclosures' were beyond the readability of 92%.		
Pashalian and Crissy (1950)	Annual reports had poor readability, beyond the comprehension of 75% of US adults.		
Worthington (1978); Schroeder and Gibson (1990); Adelberg (1979); Jones (1988)	Annual reports and their disclosures are difficult to read with very poor readability scores.		
Richards and van Staden (2011)	Financial notes had mean Flesch, Flesch Kincaid, Fog and Smog scores of 28.99, 15.14, 18.23 and 16.51 respectively.	Financial notes had mean Flesch, Flesch Kincaid, Fog and Smog scores of 26.07, 15.92, 19.04 and 17.04 respectively.	Yes
Abu Bakar and Ameer (2011)	Found CSR reports readability to be poor. Additional testing implied that poorly performing companies deliberately choose difficult language.	Difficult readability in CSR reports although better than annual reports. Poor performing companies had poorer readability.	Yes
Watson (2005)	US executive letters in 2001 and 2003 had average Flesch score of 34.55 and 34.11 respectively.	Chairman letters had average Flesch score of 35.28	Yes
Li (2008)	Annual report disclosures very complicated with a mean Fog score of 18.96.	Disclosures had average Fog score of 18.31	Yes
Courtis (1995)	Company size, industry and profitability were not associated with readability levels.	Company size and industry had no effect on readability.	Yes
Courtis (1995)	Profitability was not associated with readability levels.	Profitability positively related to readability.	No
Subramanian et al. (1993)	Disclosures of well preforming companies were more readable than those who performed badly.	Profitability positively related to readability. Well performing companies had improved readability levels.	Yes
Adelberg (1979)	Profitability inversely related to the reading difficulty.	Profitability positively related to readability.	No

Li (2008)	Large companies have less complicated disclosures.	Company size had no effect of readability.	No
Richards and van Staden (2011)	Large companies have more complicated disclosures.		
Li (2008); Stanga (1976); Richards and van Staden (2011)	Some industries have more complicated disclosures.	Industry had no effect of readability.	No

Table 44: Results of Previous Thematic Research versus This Research

Paper	Findings	This Research's Findings	Results Match?
Hildebrandt and Snyder (1981)	Chairman's letters exhibited 'the Pollyanna principle' where positive words occurred more frequently than negative words irrespective of the company's financial position.	Chairman's letters had a clear bias towards positive words with an average of 12 words compared to negatives 2 words per 500. Profitability positively related to Positive word use but not negative word use.	Yes
Abrahamson and Park (1994) and Abrahamson and Amir (1996)	High use of negativity was associated with poor performance both in the year of the report and as a predictor of future performance.	Incidence of negative keywords not related to either current or future performance. However, poor performance related to less use of positive words.	No
Rutherford (2005)	UK companies operating and financial review narratives showed a clear bias towards a positive theme, as expected by the Pollyanna principle.	Annual report discussion sections had a positive bias. They contained an average of 3.28 positive words and .57 negative words per 500-words.	Yes
Guillamon-Saorin (2006)	Positive bias in UK and Spanish press release narratives, even after controlling for performance		
Sydserff and Weetman (2002)	Significant differences were found in the Optimism scores of chairman's letters and the Activity score of manager reports when split into good performers and poor performers.	Activity score related to profitability. Optimism score not related to profitability.	Yes/No
Sydserff and Weetman (2002)	Realism and Commonality had no relationship to profitability.	Realism and Commonality had no relationship to profitability.	Yes
Ober et al. (1999); Sydserff and Weetman (2002)	Certainty not influenced by profitability levels.	Certainty had no relationship with profitability.	Yes
Ober et al. (1999)	Certainty not influenced by industry.	Certainty had no relationship with industry.	Yes

As previously discussed, research on the thematic content of disclosures had typically focused on the incidence of negative or positive key words. This research supports previous research in this regards, finding a clear bias towards positive words in all disclosures, supporting the Pollyanna principle. However, at first glance this research finds differing results regarding negative word use and profitability. Abrahamson and Park (1994) and Abrahamson and Amir (1996) discovered that negativity was associated with poor performance both in the year of the report and as a predictor of future performance. My research (which added a positive word count) found negative word use was unrelated to profitability whereas positive word was positively related. These findings can be complementary though; the relationship of positive word use and profitability would imply that positive words decreased when performance decreased. Looked at from a different angle, the relative negativity would therefore increase, as negative word counts would remain constant.

While Hildebrandt and Snyder (1981) found no relationship between positive and negative word use their overall findings match those of this research. While performance did have an impact on the incidence of positive and/or negative words in this research (as it did in Abrahamson and Park (1994) and Abrahamson and Amir (1996)), positive words always outnumbered negative words; the Pollyanna principle still existed as was found by Hildebrandt and Snyder (1981).

The final comparisons that can be made for this research concern the DICTION variables. Research using DICTION in accounting disclosures is still in its infancy with just two relevant papers to compare this research to. The only conflicting result concerned Sydserff and Weetman (2002) who found a relationship between Optimism and profitability, a finding that this research failed to find significant at either bi-variate or multivariate levels. Both Sydserff and Weetman (2002) and Ober et al. (1999) found Certainty not related to industry, a finding that this research supports. Likewise, Sydserff and Weetman (2002) found no relationship between profitability and the variables Realism, Certainty and Commonality, also supported by the findings of this research.

7. Importance and Contribution of This Research

This research has extend the typical readability and thematic data set to include disclosures from CSR reports. CSR reports are becoming progressively more popular with increasing public demand for corporate accountability and full disclosure of a company's effect on society. Despite the increased demand put on disclosing this information studies into the readability or thematic content of CSR reports are few and far between with most suffering from either very limited sample sizes or limited generalisability (being specific to a set industry). By including CSR reports in this research, it has been empirically shown that CSR reports were considerably more readable than the annual reports and had significantly different thematic characteristics. A more interesting result was that CSR disclosures in annual reports differed considerable in terms of their readability from their counterparts in dedicated CSR reports; with an average grade score .8 higher suggesting approximately 30 weeks of additional education would be required to read them). These are observations future research can explore more in-depth.

As well as extending the data set of previous studies, this research also addresses the limited scope thematic studies have had in accounting and business narratives. To achieve this DICTION 6.0 analysis is used, as suggested by Sydserff and Weetman (2002). This added the indicators Activity, Optimism, Certainty, Realism and Commonality. The addition of these variables provided additional evidence of thematic manipulation in disclosures with low profitability companies mimicking the narratives of high performance companies; the results also show a clear difference in the thematic content of different disclosures.

A side effect of being the first to test DICTION variables in a large number of corporate disclosures is the provision of comparative data for future research. This comparative aspect is promoted as a powerful aspect of DICTION 6.0 analysis, which can utilise an inbuilt database of 22,027 sample proses ranging from presidential speeches to song lyrics. Despite this large database, corporate disclosures have not been able to take advantage of comparative data as DICTION contains just 48 annual reports, all of which are from large fortune 500 companies and no CSR reports. This research can now provide this comparative data based on over 60 CSR reports and 200 annual reports; furthermore, these are reduced down into typical sections thus providing even more specific comparative data. Using this data future research can better identify outliers and interesting results with ease. Alternatively, research

that investigates a single company would gain the ability to see how their results compare to a relevant average and allow conclusions to be drawn as a result.

Being the first to test both thematic elements and readability within the same investigation this research was able to test whether the readability of a disclosure is related to positive or negative themes in disclosures. This hypothesis is essentially an alternative to the traditional manipulation hypothesis that suggests manipulation is present when there is a relationship with profitability. If manipulation is present then disclosures that have poor readability should contain more negative keywords and less positive, and likewise disclosure that are more readable should have more positive keywords and less negative. This hypothesis offers a significant advantage over the typical hypothesis as it is not dependent of financial performance and can suggest manipulation even in well preforming companies by comparing the readability of their positive disclosures and the negative disclosures. Indeed a positive relationship was found between the number of positive keywords and disclosures readability as expected by the obfuscation hypothesis and agency theory.

Literature has argued that readability formulae are inappropriate for evaluating the readability of advanced texts such as corporate disclosures and yet research has had to simply acknowledge this and justify still using them. Arguments about formula's inappropriateness are based on their construction using simpler narratives that are intended for less advanced users (such as grading schoolbooks). This research suggests that future corporate disclosure research could make use of readability or grading formulas that are specifically designed for business prose. Indeed this research even develops a simple new grading basis for disclosures that is constructed on the very proses it is intended to evaluate. Specifically designed readability formulas could revolutionise readability research in corporate disclosures, and provide findings that are considerably more robust and easier to defend.

A contribution that will be of interest to Trans-Tasman investors, companies or regulatory departments is this researches comparisons between the readability and thematic content of Australian and New Zealand disclosures. Interest in these findings is heightened with pushes for closer economic ties between these countries. This research highlights several areas that warrant additional investigation. For example, Australian companies had less readable disclosures that pose a threat to the quality of New Zealand disclosures should regulations merge. For companies in New Zealand the discovery that Australian companies had increased

levels of CSR disclosures could suggest that Australian investors demand additional accountability on this front, and New Zealand companies wishing to obtain capital from such investors should increase their CSR disclosures to appeal to their demands.

8. Limitations, Assumptions and Other Considerations

The use of readability formulae has several merits over other potential qualitative research methods with improved objectivity, increased efficiency and robust empirical procedures. However, one significant limitation concerns their validity; namely whether the formulae measure what they are intended to measure (Mailloux et al., 1995; Leong et al., 2002). These criticisms argue that readability formulae tend to ignore other variables such as readers motivation (see chapter 2.3.1, figure 2) or the layout of text and the legibility of material. Woods et al. (1998) comments "It is certainly true that a positive readability score does not guarantee that a piece of text can in fact be successfully read." (Woods et al., 1998, p.51).

Regardless, studies have shown that when used correctly, readability formulae are powerful tools. Klare (1984) reviewed multiple prior studies that investigated readability formulae and found that readability scores obtained from these formulae were related to the probability of readers actually reading a piece of text completely, the amount of information remembered by readers, the length of time taken to read a document, and the reader's personal ratings of reading difficulty. Additional support can be found in Woods et al. (1998) who comment:

> "The purposes of using readability tests in interpretation are to ensure the language style is not too difficult for the average visitor, and to assist in avoiding unnecessary scientific jargon." (Woods et al., 1998, p.51)

They go further and suggest such formulae are developed as:

> "…an 'objective' measure against writing complexity, and to estimate the reading or education level required for comprehension of the text." (Woods et al., 1998, p.51)

Leong et al. (2002) conclude in their reflection on the limitations posed by readability formulae that despite all the criticisms around the use of such tools:

> "…the general consensus is that readability formulae are helpful and can contribute towards a valid and actionable assessment of the readability of the text." (Leong et al., 2002, p.127)

I recognise the suggestions and opinions presented in these papers and in doing so defend the use of these tools for my investigation as they represent valuable indicators of the readability of correspondence. In addition, when used as a comparative tool as opposed to suggesting a definitive required education level, many of these criticisms are disarmed.

Regarding DICTION 6.0, its subjectivity is a particular strength, especially regarding validity and reliability. The fully automated nature of its coding and quantification ensures no bias is introduced and any findings can be replicated and used comparably (Sydserff & Weetman, 2002). However, some criticisms arise about the face validity of the master variables. Sydserff and Weetman (2002) take the view that:

> "…the specific theoretical basis of the approach in linguistic semantics, the fact that the approach is well established in the applied linguistics literature and the independent attestation of the approach all point to strength in face validity." (Sydserff & Weetman, 2002, p.534)

Ultimately the face validity of any variable can be questioned; for the purpose of this study I argue that DICTION's master variables are valid based on their acceptance in multiple studies in varying disciplines and as they are based on extensive academic research into linguistics. For additional examples and discussions, see Bligh et al., 2004; Downing, 2007; Finkelstein, 1997; Fogarty & Rogers, 2005; Henry, 2008 and finally Ober et al., 1999.

A computerised text extraction process also poses risks and limitations. As noted in chapter 4.2, text conversion programs often cause errors in converting a disclosure that have the potential to make tests on unchecked and fixed samples invalid. To prevent such issues this research utilised a customised conversion process that incorporated purpose made macros that cleaned and check all texts before any testing was conducted. Details on this process are provided in chapter 4.2.

While I suggest the readability formula a briefly develop and test in chapter 6.2 is a significant contribution of this research I should point out the limitations of this readability formula. For a formula to be used in future research and accepted it will require more in depth research that is designed to develop and then test a formulas validly from the onset. This research includes a simplified formula construction only to motivate future research to develop stronger and more valid formulas.

In addition to the concerns and limitations discussed above there has been some limitations put in place due to the infrastructure damage caused to the University of Canterbury (UC) in wake of the February 22nd earthquake. Limitations were placed on the availability of some papers and prior research that was held in hard copy form within the damaged central library

(and is not available online through UC subscriptions). This created only a minor limitation as all efforts were taken to access these papers through other sources where appropriate. There was only a small restriction to some databases early on in my research, to reduce the impact of these I utilised two separate databases to ensure I had continued access.

9. Future Research

This research investigated the levels of readability and thematic manipulation in corporate disclosures from New Zealand and Australia using the traditional positive and negative word counts but also DICTION based analysis. Future research could investigate further into the DICTION variables gaining valuable insights into the language used by companies in different correspondences and under difference situations. In addition, far more in-depth results could be attained by extending analysis from the master DICTION variable to the many sub variables that these are based on.

In the process of testing new variables, this research also tested results that had been previously studied. In chapter 6.3 I presented the significant findings of previous papers and noted some occasions where they conflicted with one another or my own research. Future research could investigate conflicting results in further detail with the aim of discovering why they exist; different methodological approaches could be rewarding in this regard. Likewise, where this research found new relationships or differences (such as the Trans-Tasman differences or the difference in thematic content of disclosures), future research should attempt to confirm my findings (or dis-prove them) and go in-depth into why these differences may exist.

The greatest area of future research is in regards to my suggestion for a new readability formula. In chapter 6.2 I introduced a simple way of evaluating the readability of disclosures; future research needs to continue with this. Development of formulae that accurately evaluate the readability of corporate prose and provide accurate reader implications will add significantly to research. At the same time, future research could work on the development of a framework for comparing and ranking disclosures (such as annual reports) on the quality of disclosures. This needs to provide a unified approach that evaluates the information content of disclosures, their verifiability, readability, presentation etcetera. Such a framework could be similar to that of the G3 framework that was developed for CSR reports.

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Appendices

Appendix 1: Initial Company Sample List

NZX50 Sample List	S&P/ASX100 Sample List	
AIR NEW ZEALAND	AGL ENERGY LTD	LEIGHTON HLDGS LTD
AMP (NZE)	AMP LTD	LEND LEASE GROUP
AMP NZ OFFICE TRUST	ANZ BANKING GROUP	LYNAS CORPORATION
APN NEWS & MEDIA	APA GROUP	MAP AIRPORTS
AUCKLAND INTL.AIRPORT	ASX LIMITED	MACARTHUR COAL LTD
AUS.AND NZ.BANKING GP.	ALUMINA LTD	MACQUARIE GROUP LTD
CAVALIER	AMCOR LTD	METCASH LTD
CONTACT ENERGY	ANSELL	MIRVAC GROUP
EBOS GROUP	AQUARIUS	MYER HOLDINGS LTD
FISHER & PAYKEL APP.	ASCIANO LTD	NATIONAL AUST. BANK
FISHER & PAYKEL HLT.	ATLAS IRON LIMITED	NEWCREST MINING LTD
FLETCHER BUILDING	BHP BILLITON LTD	NEWS CORPORATION LTD
FREIGHTWAYS	BANK OF QUEENSLAND	OZ MINERALS LIMITED
GOODMAN FIELDER	BENDIGO AND ADELAIDE	OIL SEARCH LTD
GOODMAN PROP. TRUST	BILLABONG INTL LTD	ONESTEEL LTD
GUINNESS PEAT GP.	BLUESCOPE STEEL LTD	ORICA LTD
HALLENSTEIN GLAS. HDG.	BOART LONGYEAR	ORIGIN ENERGY LTD
INFRATIL	BORAL LTD	PALADIN ENERGY LTD.
ING MEDICAL PROPS.TST.	BRAMBLES INDUSTRIES	PANAUST LTD
ING PROPERTY TRUST	CFS RETAIL PROPERTY	PERPETUAL LIMITED
KATHMANDU HDG.	CSL LTD	PRIMARY HEALTH CARE
KIWI INCOME PR.TRUST	CSR LTD	QBE INSURANCE GROUP
MAINFREIGHT	CALTEX AUSTRALIA LTD	QR NATIONAL LTD
MICHAEL HILL INTL.	CHALLENGER LIMITED	QANTAS AIRWAYS LTD
NZ OIL AND GAS	CHARTER HALL OFFICE	RAMSAY HEALTH CARE
NEW ZEALAND REFINING	COCA-COLA AMATIL LTD	RESMED INC
NUPLEX INDUSTRIES	COCHLEAR LTD	RIO TINTO LTD
NZ FARM. SYS.URUGUAY	COMMONWEALTH BANK	SANTOS LTD
NZX	COMMON. PROPERTY	SEEK LTD
PAN PACIFIC PETROLEUM	COMPUTERSHARE LTD	SEVEN WEST MEDIA LTD
PGG WRIGHTSON	CONNECTEAST GROUP	MANAGEMENT LTD
PIKE RIVER COAL	CROWN LIMITED	SONIC HEALTHCARE LTD
PORT OF TAURANGA	DAVID JONES LTD	SPARK INFRASTRUCTURE
PROPERTY FOR INDUSTRY	DEXUS PROPERTY GROUP	STOCKLAND
PUMPKIN PATCH	DOWNER EDI LTD	SUNCORP GROUP LTD
PYNE GOULD	DUET GROUP	TABCORP HLDGS LTD
RAKON	ECHO ENTERTAINMENT	TATTS GROUP LIMITED

RESTAURANT BRANDS NZ.	FAIRFAX MEDIA LTD	TELSTRA CORP LTD
RYMAN HEALTHCARE	FORTESCUE METALS	TOLL HLDGS LTD
SANFORD	FOSTER'S GROUP LTD	TRANSFIELD SERVICES
SKY CITY ENTM.GP.	GPT GROUP	TRANSURBAN GROUP NPV
SKY TELEVISION	GOODMAN FIELDER	TREASURY WINE ESTATES
STEEL & TUBE HOLDINGS	GOODMAN GROUP	UGL LTD
TELECOM CORP.OF NZ.	HARVEY NORMAN HLDGS	WESFARMERS LTD
TELSTRA	ILUKA RESOURCES LTD	WESTFIELD GROUP
TOWER	INCITEC PIVOT	WESTFIELD RETAIL TRUST
TRUSTPOWER	INSURANCE AUSTRALIA	WESTPAC BANKING CORP
VECTOR	INVESTA OFFICE FUND	WOODSIDE PETROLEUM
WAREHOUSE GROUP	JAMES HARDIE	WOOLWORTHS LTD
WESTPAC BANK	JB HI-FI	WORLEYPARSONS LTD
TOTAL 50	TOTAL 100	

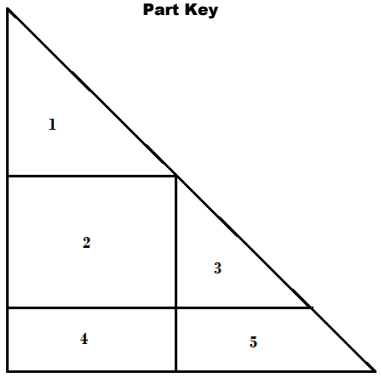
Appendix 2: Final Company Sample List

NZX50 Sample List	S&P/ASX100 Sample List	
AIR NEW ZEALAND	AGL ENERGY LTD	JB HI-FI
AMP (NZE)	AMCOR LTD	LEIGHTON HLDGS LTD
AMP NZ OFFICE TRUST	ANSELL	LEND LEASE GROUP
AUS.AND NZ.BANKING GP.	APA GROUP	LYNAS CORPORATION
AUCKLAND INTL.AIRPORT	AQUARIUS	MACQUARIE AIRPORTS
CAVALIER	ASCIANO LTD	MACQUARIE GROUP LTD
CONTACT ENERGY	ASX LIMITED	METCASH LTD
FISHER & PAYKEL APP.	ATLAS IRON LIMITED	MIRVAC GROUP
FISHER & PAYKEL HLT.	BANK OF QUEENSLAND	NATIONAL AUST. BANK
FLETCHER BUILDING	BENDIGO AND ADELAIDE	NEWCREST MINING LTD
FREIGHTWAYS	BHP BILLITON LTD	NEWS CORPORATION LTD
GOODMAN FIELDER	BILLABONG INTL LTD	OIL SEARCH LTD
GOODMAN PROP. TRUST	BLUESCOPE STEEL LTD	ONESTEEL LTD
GUINNESS PEAT GP.	BOART LONGYEAR	ORICA LTD
HALLENSTEIN GLAS. HDG.	BORAL LTD	ORIGIN ENERGY LTD
INFRATIL	BRAMBLES INDUSTRIES	OZ MINERALS LIMITED
ING MEDICAL PROPS.TST.	CALTEX AUSTRALIA LTD	PANAUST LTD
ING PROPERTY TRUST	CFS RETAIL PROPERTY	PERPETUAL LIMITED
KIWI INCOME PR.TRUST	CHALLENGER LIMITED	PRIMARY HEALTH CARE
MAINFREIGHT	CHARTER HALL OFFICE	QANTAS AIRWAYS LTD
MICHAEL HILL INTL.	COCA-COLA AMATIL LTD	QBE INSURANCE GROUP
NZ OIL AND GAS	COCHLEAR LTD	RAMSAY HEALTH CARE
NEW ZEALAND REFINING	COMMONWEALTH BANK	RESMED INC
NZ FARM. SYS.URUGUAY	COMMON. PROPERTY	RIO TINTO LTD
PGG WRIGHTSON	COMPUTERSHARE LTD	SANTOS LTD
PIKE RIVER COAL	CONNECTEAST GROUP	SEEK LTD
PROPERTY FOR INDUSTRY	CROWN LIMITED	SIMS METAL MGT
PUMPKIN PATCH	CSL LTD	SONIC HEALTHCARE LTD
RAKON	CSR LTD	SPARK INFRASTRUCTURE
RESTAURANT BRANDS NZ.	DAVID JONES LTD	STOCKLAND
RYMAN HEALTHCARE	DEXUS PROPERTY GROUP	SUNCORP GROUP LTD
SANFORD	DOWNER EDI LTD	TABCORP HLDGS LTD
STEEL & TUBE HOLDINGS	DUET GROUP	TATTS GROUP LIMITED
TELECOM CORP.OF NZ.	FAIRFAX MEDIA LTD	TOLL HLDGS LTD
TELSTRA	FORTESCUE METALS	TRANSFIELD SERVICES
TOWER	FOSTER'S GROUP LTD	TRANSURBAN GROUP NPV
TRUSTPOWER	GOODMAN FIELDER	UGL LTD

WAREHOUSE GROUP	GOODMAN GROUP	WESFARMERS LTD
WESTPAC BANK	GPT GROUP	WESTFIELD GROUP
	HARVEY NORMAN HLDGS	WOODSIDE PETROLEUM
	ILUKA RESOURCES LTD	WOOLWORTHS LTD
	INCITEC PIVOT	WORLEYPARSONS LTD
	INSURANCE AUSTRALIA	
TOTAL 39	TOTAL 85	

Appendix 3: Kendall tau Correlations

Part 1		Activity	Optimism	Certainty	Realism	Common.	Positive	Negative	Flesch	Flesch Kin.	Fog	Smog	MV NZD	Pro. Mar.
Activity	Correlation	1.000												
	Sig.	.												
	N	824												
Optimism	Correlation	.038	1.000											
	Sig.	.100	.											
	N	824	824											
Certainty	Correlation	-.090**	-.293**	1.000										
	Sig.	.000	.000	.										
	N	824	824	824										
Realism	Correlation	-.043	.176**	-.137**	1.000									
	Sig.	.066	.000	.000	.									
	N	824	824	824	824									
Commonality	Correlation	-.076**	-.143**	.202**	-.179**	1.000								
	Sig.	.001	.000	.000	.000	.								
	N	824	824	824	824	824								
Positive	Correlation	.040	.456**	-.265**	.188**	-.191**	1.000							
	Sig.	.087	.000	.000	.000	.000	.							
	N	824	824	824	824	824	824							
Negative	Correlation	.001	-.036	-.090**	.101**	-.055*	.189**	1.000						
	Sig.	.970	.123	.000	.000	.021	.000	.						
	N	824	824	824	824	824	824	824						
Flesch	Correlation	-.051*	.145**	-.165**	.347**	-.153**	.168**	.084**	1.000					
	Sig.	.033	.000	.000	.000	.000	.000	.000	.					
	N	824	824	824	824	824	824	824	824					
Flesch Kin.	Correlation	.012	-.135**	.162**	-.237**	.123**	-.138**	-.036	-.770**	1.000				
	Sig.	.619	.000	.000	.000	.000	.000	.125	.000	.				
	N	824	824	824	824	824	824	824	824	824				
Fog	Correlation	-.007	-.127**	.181**	-.227**	.120**	-.128**	-.047*	-.719**	.864**	1.000			
	Sig.	.754	.000	.000	.000	.000	.000	.046	.000	.000	.			
	N	824	824	824	824	824	824	824	824	824	824			
Smog	Correlation	-.022	-.191**	.219**	-.245**	.153**	-.184**	-.045	-.729**	.861**	.887**	1.000		
	Sig.	.343	.000	.000	.000	.000	.000	.061	.000	.000	.000	.		
	N	824	824	824	824	824	824	824	824	824	824	824		
MV NZD	Correlation	.060*	.014	-.092**	-.092**	-.042	.005	.004	-.124**	.079**	.065**	.045	1.000	
	Sig.	.011	.556	.000	.000	.072	.837	.852	.000	.001	.006	.060	.	
	N	809	809	809	809	809	809	809	809	809	809	809	809	
Pro. Mar.	Correlation	.032	.026	-.025	-.016	-.028	.002	-.047*	-.009	-.034	-.051*	-.055*	.214**	1.000
	Sig.	.171	.279	.298	.489	.244	.928	.047	.695	.155	.032	.021	.000	.
	N	802	802	802	802	802	802	802	802	802	802	802	802	802
Current	Correlation	-.022	-.016	-.041	-.002	-.006	-.018	.003	.001	.013	.001	.001	-.095**	-.011
	Sig.	.355	.510	.081	.947	.787	.439	.894	.980	.594	.969	.954	.000	.644
	N	806	806	806	806	806	806	806	806	806	806	806	806	799
Solvancy	Correlation	-.067**	.017	.005	.023	-.007	-.013	-.008	.022	-.002	-.009	-.008	-.110**	-.010
	Sig.	.004	.462	.820	.333	.762	.581	.731	.354	.942	.717	.739	.000	.681
	N	809	809	809	809	809	809	809	809	809	809	809	809	802
ROE	Correlation	.056*	.026	-.025	-.011	-.014	.047*	-.011	.064**	-.100**	-.114**	-.115**	.136**	.382**
	Sig.	.018	.277	.291	.632	.556	.048	.639	.008	.000	.000	.000	.000	.000
	N	804	804	804	804	804	804	804	804	804	804	804	804	799



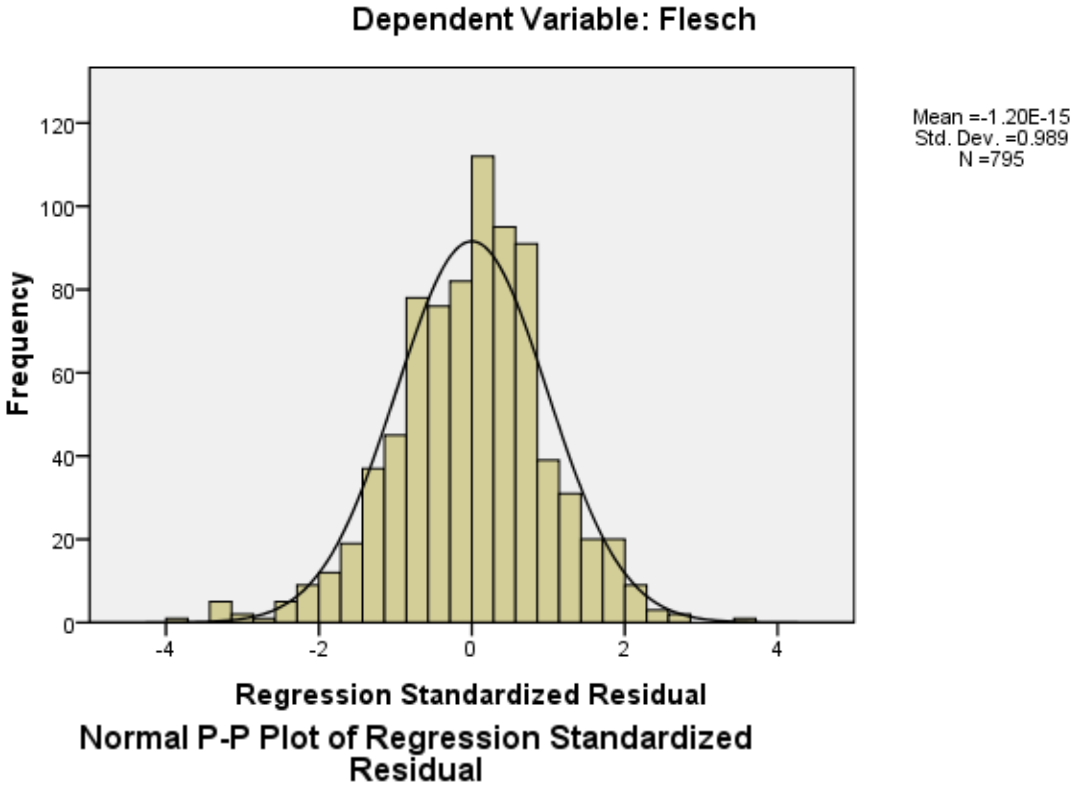
Part 2		Activity	Optimism	Certainty	Realism	Common.	Positive	Negative	Flesch	Flesch Kin.	Fog	Smog	MV NZD	Pro. Mar.
ROA	Correlation	.070**	.009	-.019	-.009	-.009	.030	-.014	.046	-.081**	-.103**	-.097**	.030	.404**
	Sig.	.003	.709	.421	.695	.700	.209	.562	.058	.001	.000	.000	.200	.000
	N	804	804	804	804	804	804	804	804	804	804	804	804	799
Fut ROE	Correlation	.084**	-.001	-.045	-.009	-.002	.012	.022	.073**	-.083**	-.089**	-.096**	.152**	.141**
	Sig.	.000	.951	.057	.712	.941	.604	.353	.002	.000	.000	.000	.000	.000
	N	802	802	802	802	802	802	802	802	802	802	802	802	795
Fut ROA	Correlation	.103**	-.014	-.036	-.003	-.004	-.005	.027	.066**	-.080**	-.092**	-.095**	.078**	.103**
	Sig.	.000	.544	.132	.899	.873	.828	.253	.006	.001	.000	.000	.001	.000
	N	802	802	802	802	802	802	802	802	802	802	802	802	795
CSR OPEN	Correlation	.172**	.203**	-.185**	.141**	-.107**	.135**	-.050	.009	-.017	-.052	-.084**	.132**	.092**
	Sig.	.000	.000	.000	.000	.000	.000	.085	.754	.550	.070	.004	.000	.002
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
CSR MAIN	Correlation	.146**	.016	-.118**	-.163**	-.063*	-.040	.012	-.003	-.065*	-.107**	-.119**	.142**	.096**
	Sig.	.000	.572	.000	.000	.027	.162	.685	.908	.025	.000	.000	.000	.001
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
AR CHAIR	Correlation	-.042	.414**	-.252**	.298**	-.203**	.488**	.201**	.337**	-.229**	-.179**	-.238**	-.070*	-.046
	Sig.	.141	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.014	.113
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
AR DISC	Correlation	-.078**	-.176**	.177**	-.125**	.092**	-.230**	-.242**	-.029	-.014	.058*	.031	-.067*	-.032
	Sig.	.007	.000	.000	.000	.001	.000	.000	.323	.635	.043	.286	.020	.266
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
AR CSR	Correlation	.096**	.145**	-.107**	-.082**	.004	.075*	-.078**	-.190**	.108**	.060*	.043	.068*	.019
	Sig.	.001	.000	.000	.004	.890	.008	.007	.000	.000	.037	.131	.019	.517
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
AR NOTES	Correlation	-.118**	-.415**	.289**	-.090**	.191**	-.321**	.119**	-.180**	.212**	.165**	.280**	-.062*	-.042
	Sig.	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000	.000	.030	.143
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
AUS	Correlation	.062*	-.017	-.041	-.221**	-.033	-.025	-.030	-.289**	.235**	.235**	.218**	.523**	.043
	Sig.	.029	.542	.155	.000	.249	.389	.296	.000	.000	.000	.000	.000	.137
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
Energy	Correlation	.012	.045	-.034	-.007	-.031	-.011	.024	-.051	.047	.039	.030	-.006	.068*
	Sig.	.662	.116	.235	.817	.270	.700	.399	.077	.100	.173	.290	.836	.018
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
Goods	Correlation	.110**	.007	-.033	-.041	.047	.027	.015	-.069*	.075**	.052	.062*	.021	-.041
	Sig.	.000	.809	.253	.151	.098	.335	.603	.017	.009	.072	.032	.459	.152
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
Industrial	Correlation	-.027	.004	-.035	-.006	.006	-.047	-.038	-.028	.023	.032	.012	.095**	-.007
	Sig.	.340	.887	.221	.835	.846	.103	.189	.331	.424	.264	.677	.001	.805
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
Investment	Correlation	-.107**	.010	.042	-.005	.010	.016	.005	.003	.026	.042	.044	-.009	.064*
	Sig.	.000	.715	.144	.873	.713	.563	.872	.907	.368	.141	.127	.750	.028
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
Primary	Correlation	-.012	-.011	-.053	.000	-.030	.056*	.031	.037	-.039	-.038	-.038	-.097**	-.125**
	Sig.	.669	.704	.061	.986	.287	.048	.280	.200	.170	.180	.190	.001	.000
	N	824	824	824	824	824	824	824	824	824	824	824	809	802
Services	Correlation	.030	-.046	.080**	.048	-.012	-.032	-.018	.092**	-.117**	-.115**	-.102**	-.027	.015
	Sig.	.290	.106	.005	.090	.661	.267	.532	.001	.000	.000	.000	.349	.610
	N	824	824	824	824	824	824	824	824	824	824	824	809	802

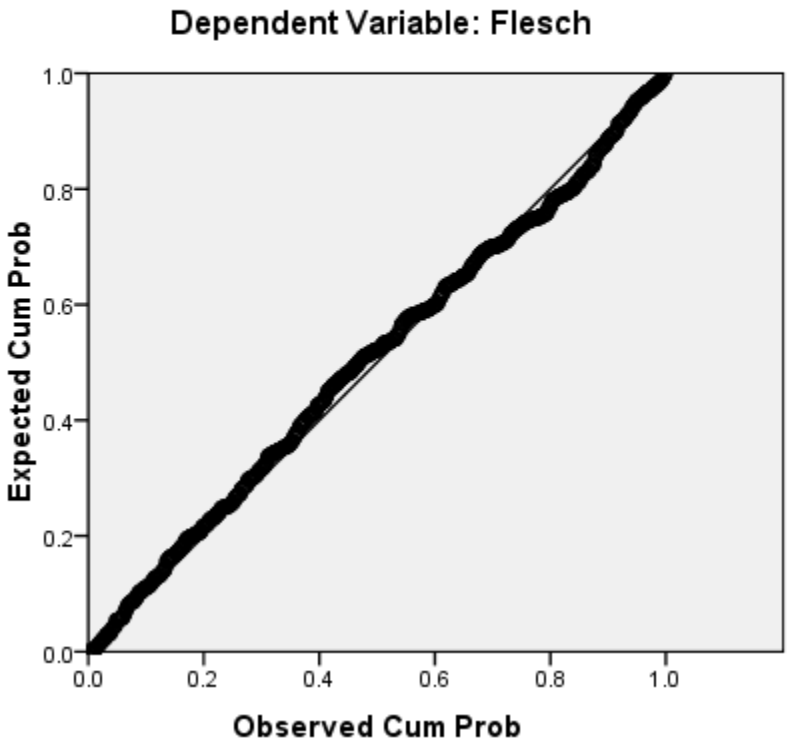
Part 3		Current	Solvency	ROE	ROA	Fut Pro	Fut ROE	Fut ROA	CSR OPEN	CSR MAIN	AR CHAIR	AR DISC	AR CSR	AR NOTES	AUS
Current	Correlation	1.000													
	Sig.	.													
	N	806													
Solvency	Correlation	.306**	1.000												
	Sig.	.000	.												
	N	806	809												
ROE	Correlation	.057*	-.156**	1.000											
	Sig.	.015	.000	.											
	N	804	804	804											
ROA	Correlation	.176**	.040	.671**	1.000										
	Sig.	.000	.089	.000	.										
	N	804	804	804	804										
Fut Pro	Correlation	-.001	-.069**	.162**	.113**	1.000									
	Sig.	.979	.003	.000	.000	.									
	N	800	803	798	798	803									
Fut ROE	Correlation	.049*	-.165**	.410**	.252**	.443**	1.000								
	Sig.	.039	.000	.000	.000	.000	.								
	N	802	802	800	800	800	802								
Fut ROA	Correlation	.153**	-.014	.267**	.375**	.417**	.696**	1.000							
	Sig.	.000	.567	.000	.000	.000	.000	.							
	N	802	802	800	800	800	802	802							
CSR OPEN	Correlation	.010	-.033	.095**	.066*	.060*	.074*	.063*	1.000						
	Sig.	.716	.257	.001	.022	.036	.010	.030	.						
	N	806	809	804	804	803	802	802	824						
CSR MAIN	Correlation	.004	-.034	.102**	.076**	.077**	.089**	.078**	-.074*	1.000					
	Sig.	.879	.241	.000	.009	.008	.002	.007	.033	.					
	N	806	809	804	804	803	802	802	824	824					
AR CHAIR	Correlation	-.003	.003	-.020	-.027	-.048	-.016	-.028	-.144**	-.152**	1.000				
	Sig.	.914	.915	.487	.358	.094	.585	.334	.000	.000	.				
	N	806	809	804	804	803	802	802	824	824	824				
AR DISC	Correlation	.003	.005	-.032	-.022	-.021	-.021	-.018	-.165**	-.174**	-.338**	1.000			
	Sig.	.927	.867	.273	.439	.462	.461	.542	.000	.000	.000	.			
	N	806	809	804	804	803	802	802	824	824	824	824			
AR CSR	Correlation	-.015	.012	-.030	-.003	.016	-.049	-.033	-.074*	-.078*	-.151**	-.173**	1.000		
	Sig.	.612	.678	.304	.908	.569	.088	.248	.035	.026	.000	.000	.		
	N	806	809	804	804	803	802	802	824	824	824	824	824		
AR NOTES	Correlation	.000	.023	-.044	-.031	-.020	-.027	-.016	-.166**	-.176**	-.341**	-.391**	-.174**	1.000	
	Sig.	.994	.418	.125	.277	.485	.343	.572	.000	.000	.000	.000	.000	.	
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	
AUS	Correlation	-.099**	-.112**	-.012	-.100**	.110**	.053	-.015	.061	.075*	-.095**	-.039	.115**	-.015	1.000
	Sig.	.001	.000	.668	.001	.000	.068	.610	.082	.032	.006	.269	.001	.662	.
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824
Energy	Correlation	.003	.014	-.032	.023	.078*	.015	.052	.061	.049	.005	-.033	.019	-.044	-.058
	Sig.	.927	.624	.268	.431	.007	.595	.073	.081	.163	.885	.347	.586	.203	.098
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824
Goods	Correlation	.145**	.023	.057*	.137**	-.017	.068*	.145**	.013	.038	-.018	-.009	.015	-.013	.042
	Sig.	.000	.426	.047	.000	.546	.018	.000	.699	.276	.615	.796	.666	.718	.225
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824
Industrial	Correlation	.254**	.162**	-.023	-.013	.006	-.063*	-.012	.060	.044	-.051	-.028	.047	-.010	.147**
	Sig.	.000	.000	.432	.645	.827	.029	.680	.086	.204	.147	.422	.180	.769	.000
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824
Investment	Correlation	-.321**	-.114**	-.128**	-.264**	.000	-.142**	-.312**	-.033	-.024	.021	.012	-.010	.007	.042
	Sig.	.000	.000	.000	.000	.990	.000	.000	.341	.494	.556	.741	.772	.837	.233
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824

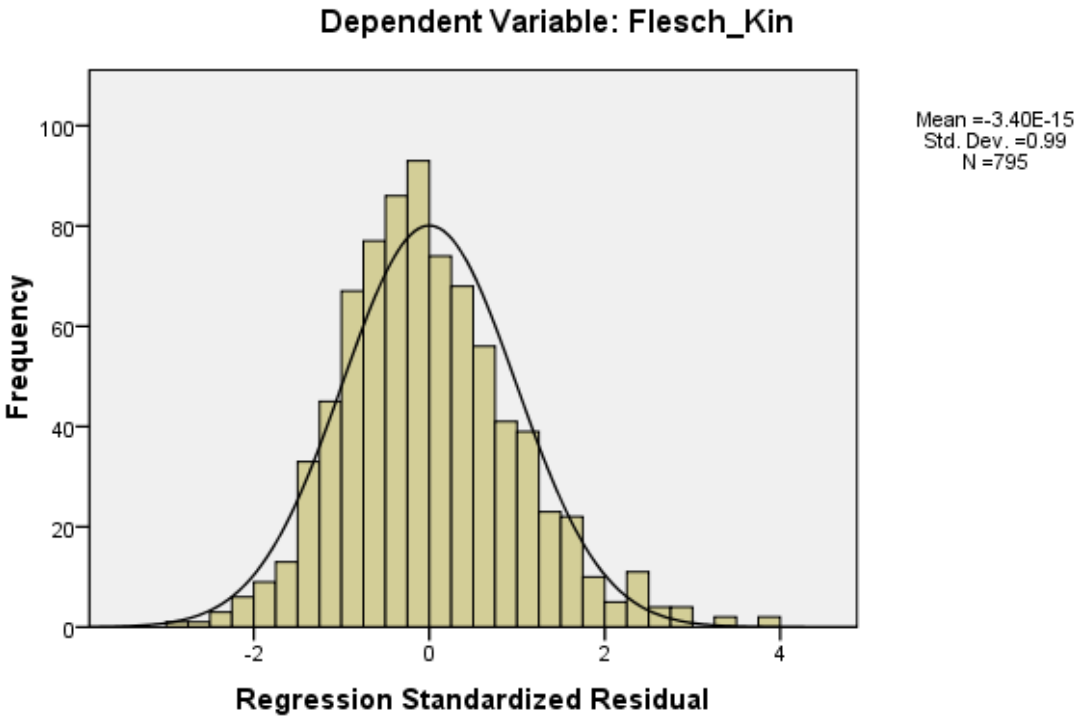
Part 4		Current	Solvency	ROE	ROA	Fut Pro	Fut ROE	Fut ROA	CSR OPEN	CSR MAIN	AR CHAIR	AR DISC	AR CSR	AR NOTES	AUS
Primary	Correlation	.085**	.060*	-.079**	-.082**	-.132**	-.107**	-.094**	-.015	-.006	.021	.013	-.021	-.009	-.116**
	Sig.	.003	.036	.006	.005	.000	.000	.001	.676	.856	.539	.715	.540	.803	.001
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824
Services	Correlation	-.103**	-.104**	.164**	.179**	.046	.193**	.206**	-.064	-.077*	.017	.037	-.042	.051	-.090*
	Sig.	.000	.000	.000	.000	.113	.000	.000	.068	.028	.627	.288	.226	.145	.010
	N	806	809	804	804	803	802	802	824	824	824	824	824	824	824

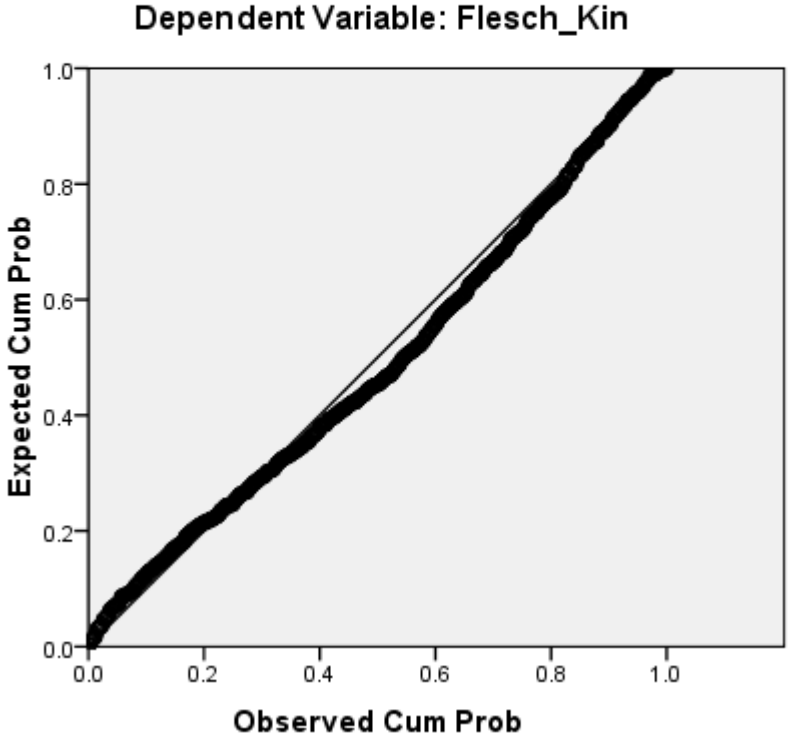
Part 5		Energy	Goods	Industrial	Investment	Primary	Services
Energy	Correlation	1.000					
	Sig.	.					
	N	824					
Goods	Correlation	-.147**	1.000				
	Sig.	.000	.				
	N	824	824				
Industrial	Correlation	-.151**	-.205**	1.000			
	Sig.	.000	.000	.			
	N	824	824	824			
Investment	Correlation	-.175**	-.236**	-.242**	1.000		
	Sig.	.000	.000	.000	.		
	N	824	824	824	824		
Primary	Correlation	-.104**	-.140**	-.144**	-.166**	1.000	
	Sig.	.003	.000	.000	.000	.	
	N	824	824	824	824	824	
Services	Correlation	-.192**	-.259**	-.266**	-.307**	-.183**	1.000
	Sig.	.000	.000	.000	.000	.000	.
	N	824	824	824	824	824	824

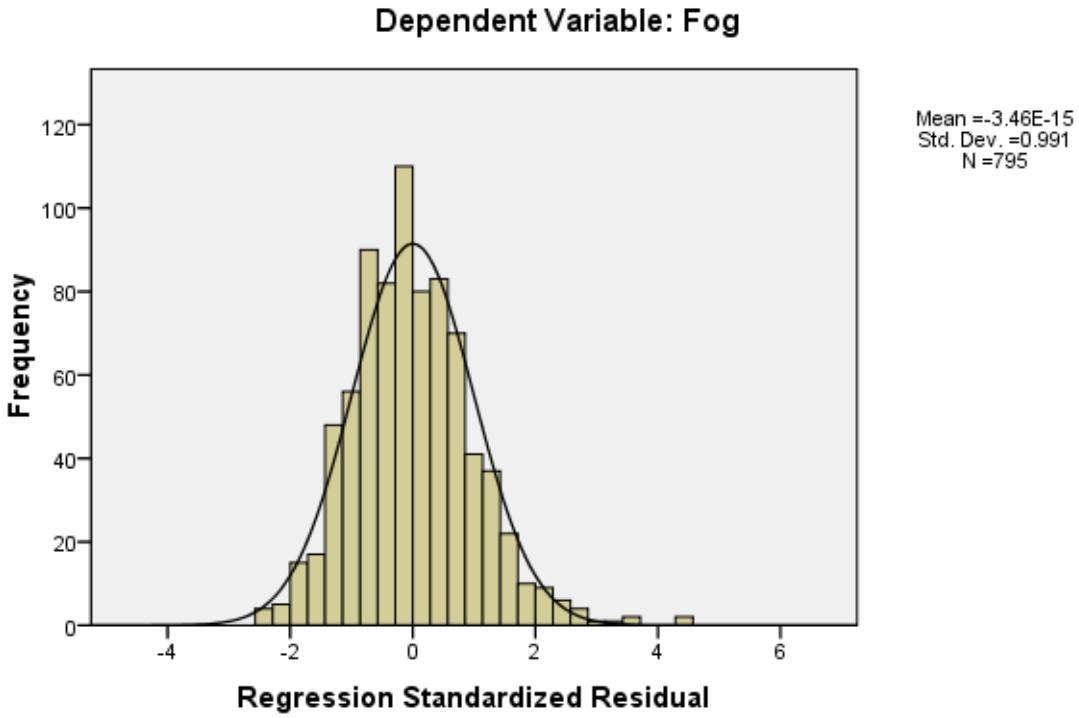
Appendix 4: Readability Linear Regression Models' Residual Plots

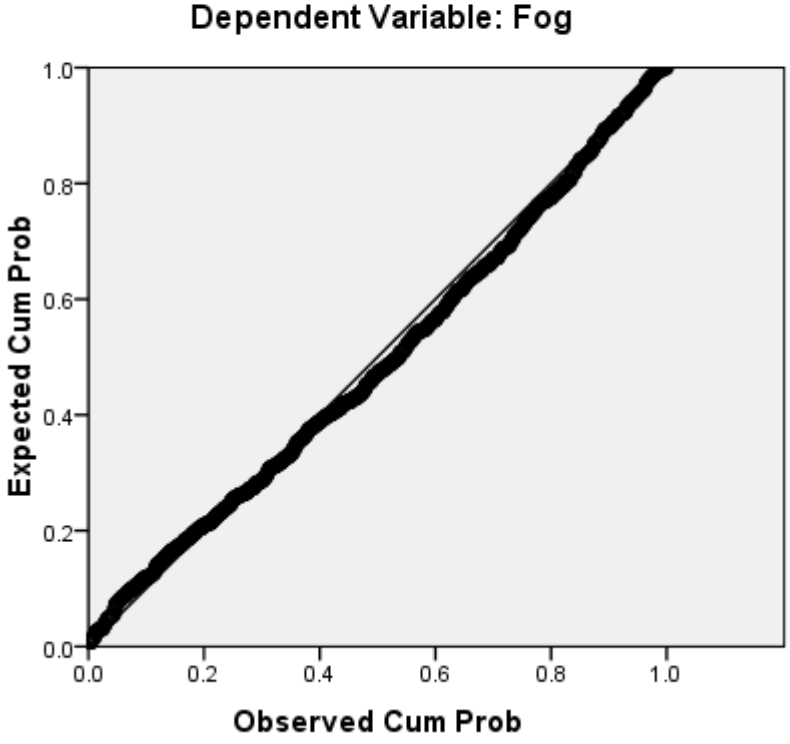


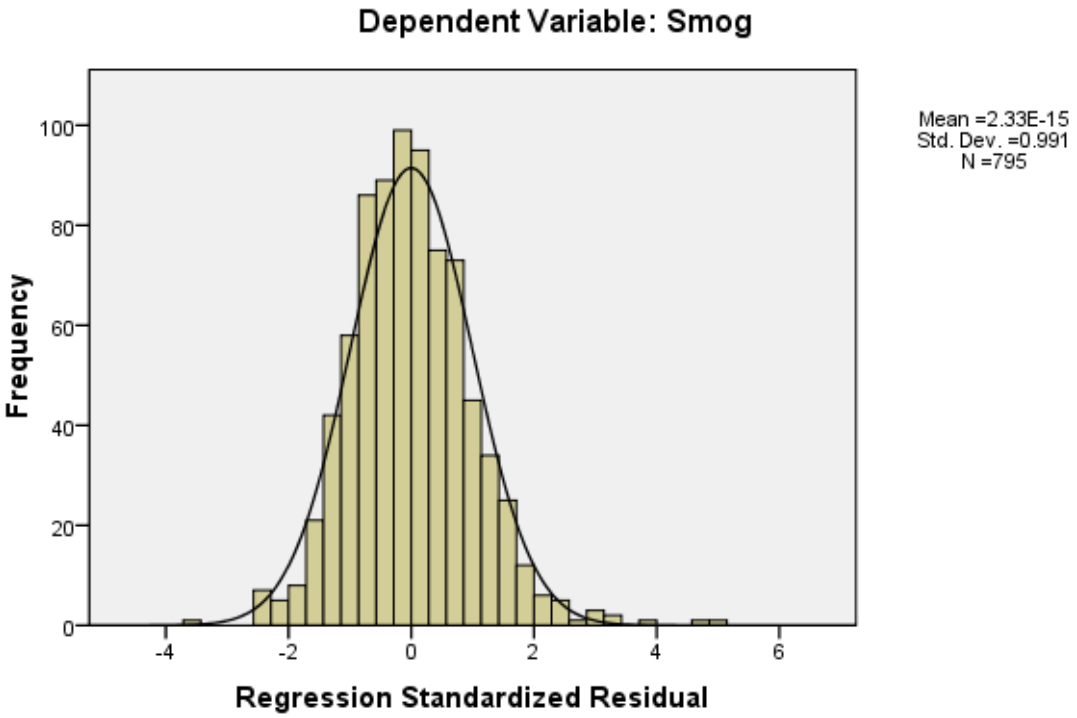



Dependent Variable: Flesch_Kin
Mean =-3.40E-15
Std. Dev. =0.99
N =795
Frequency
100
80
60
40
20
0
-2
0
2
4
Regression Standardized Residual

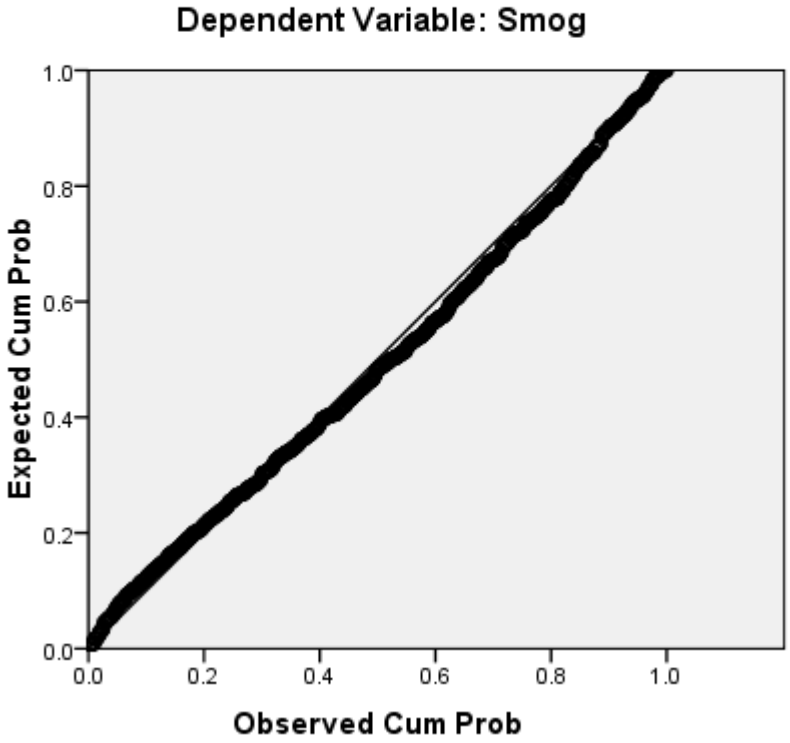

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Flesch_Kin
Expected Cum Prob
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Observed Cum Prob


Dependent Variable: Fog
Mean =-3.46E-15
Std. Dev. =0.991
N =795
Frequency
Regression Standardized Residual

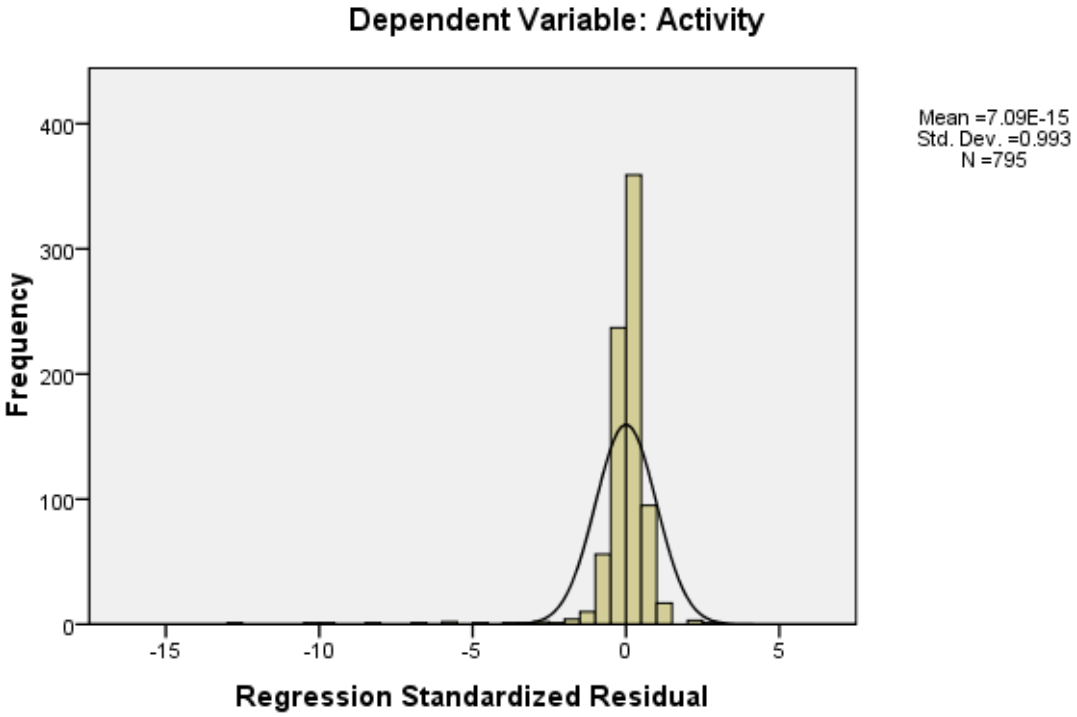

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Fog
Expected Cum Prob
Observed Cum Prob

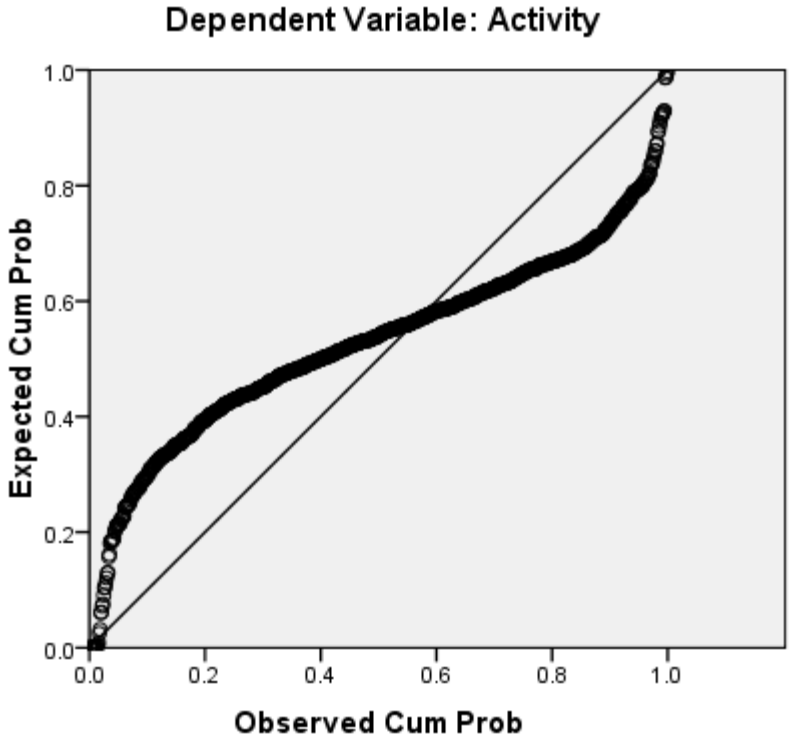


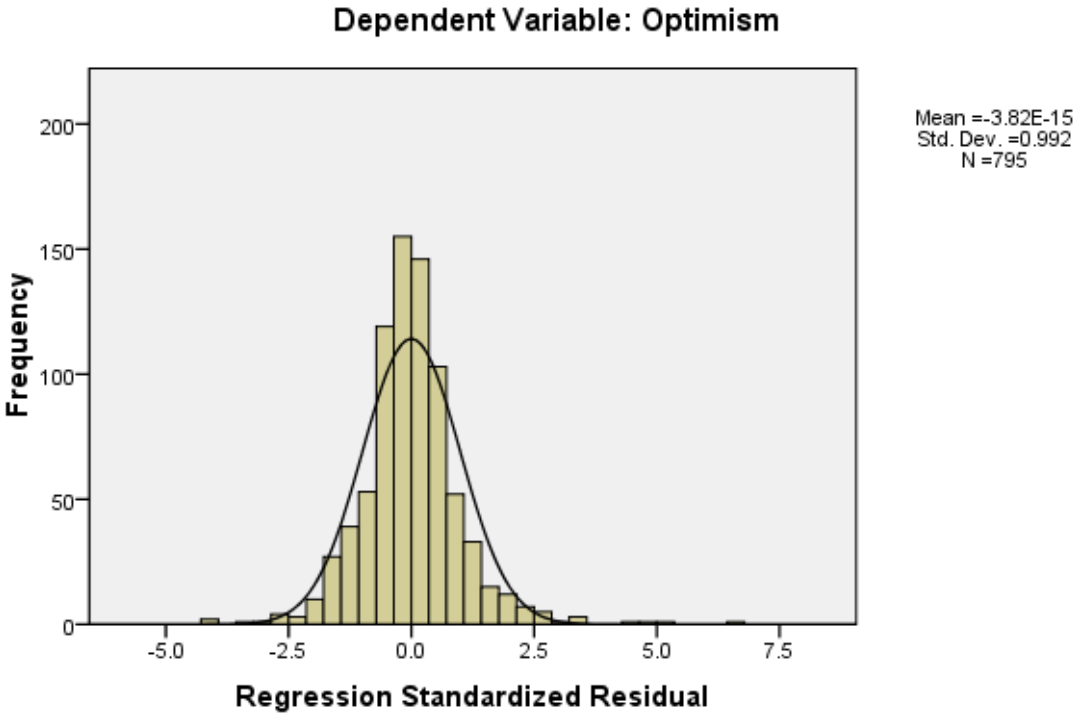
Normal P-P Plot of Regression Standardized Residual



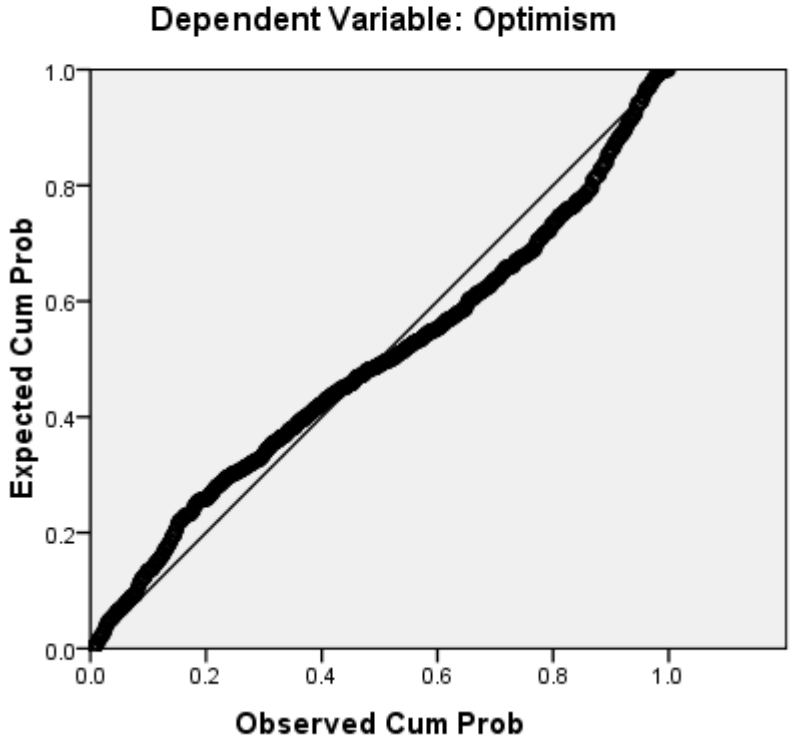
Appendix 5: Thematic Linear Regression Models' Residual Plots

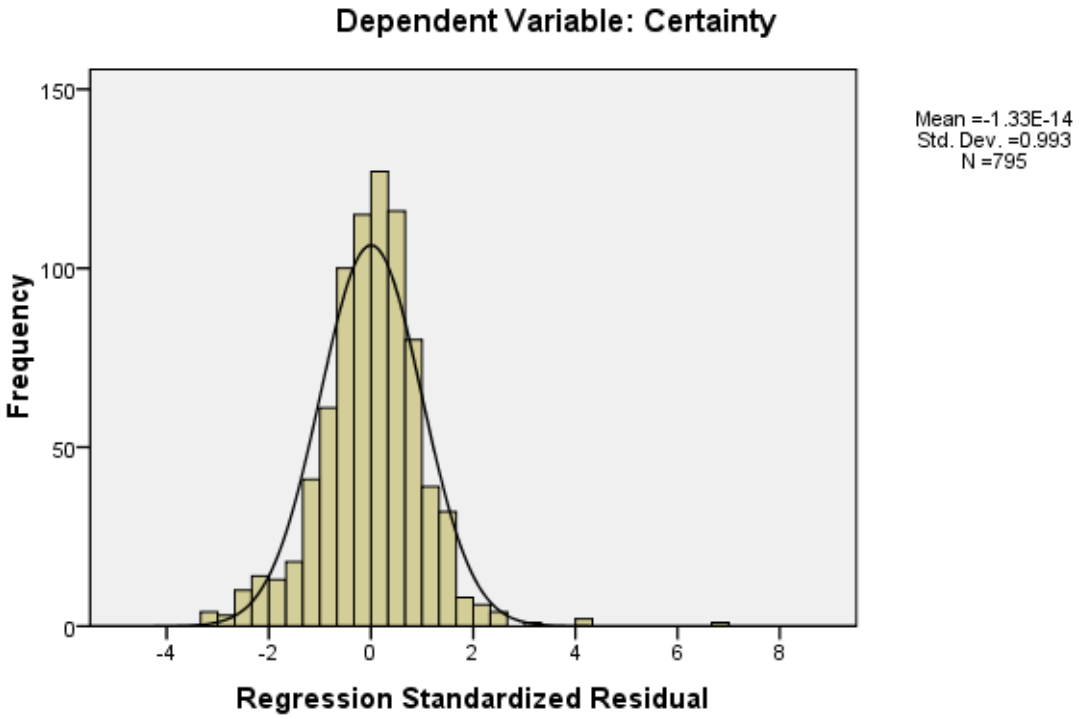




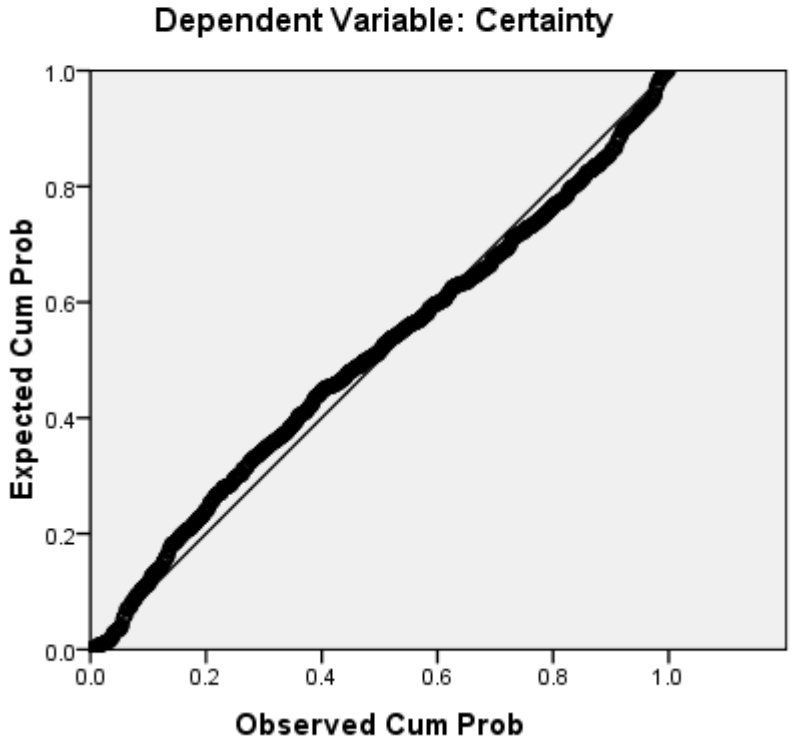


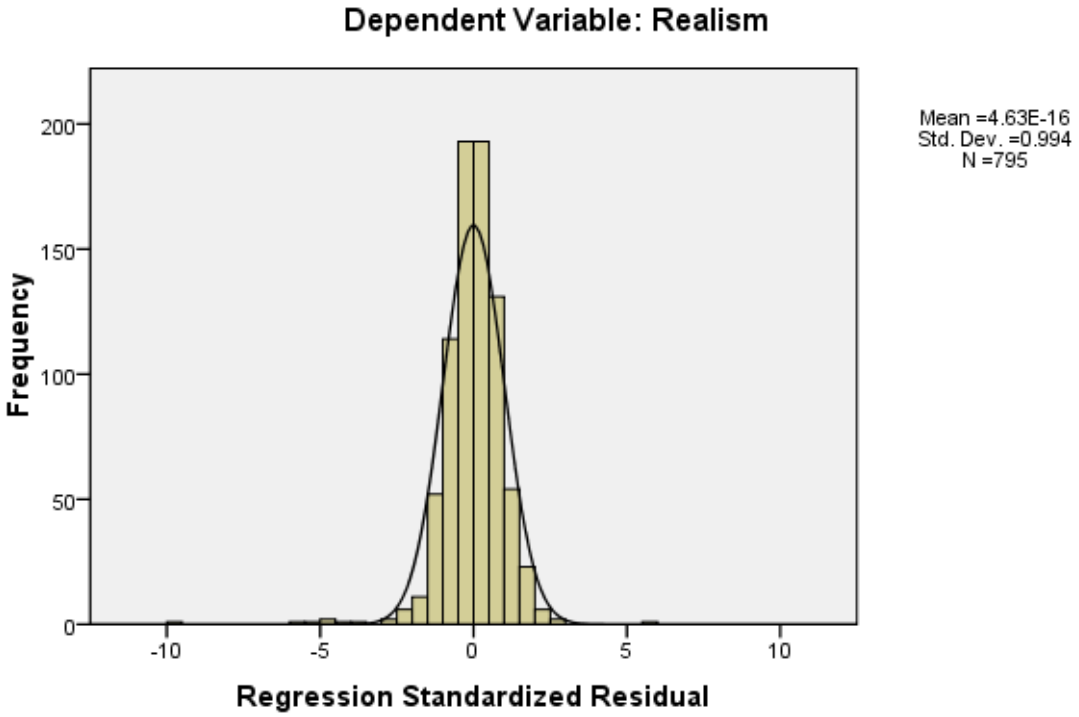
Normal P-P Plot of Regression Standardized Residual



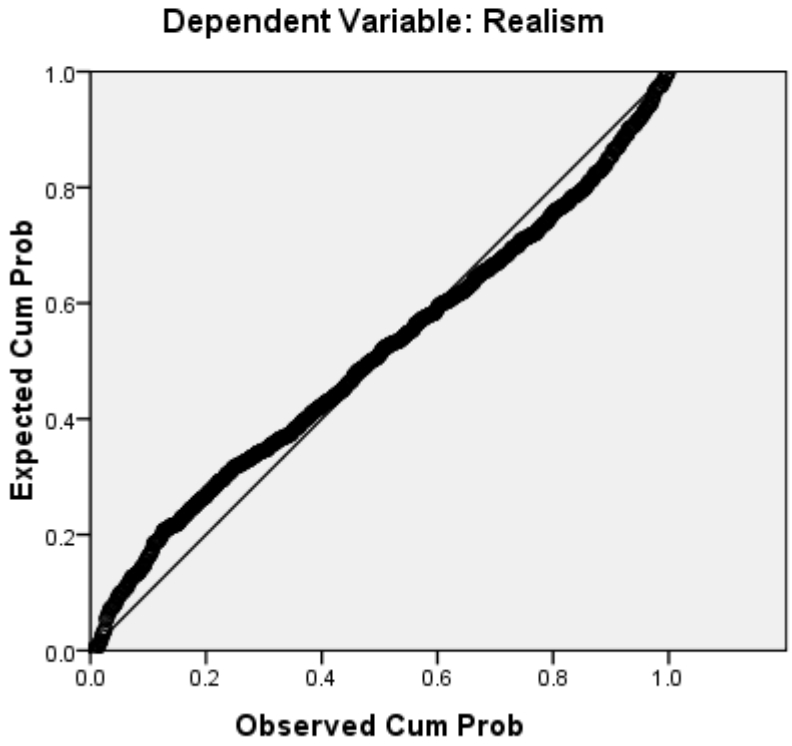


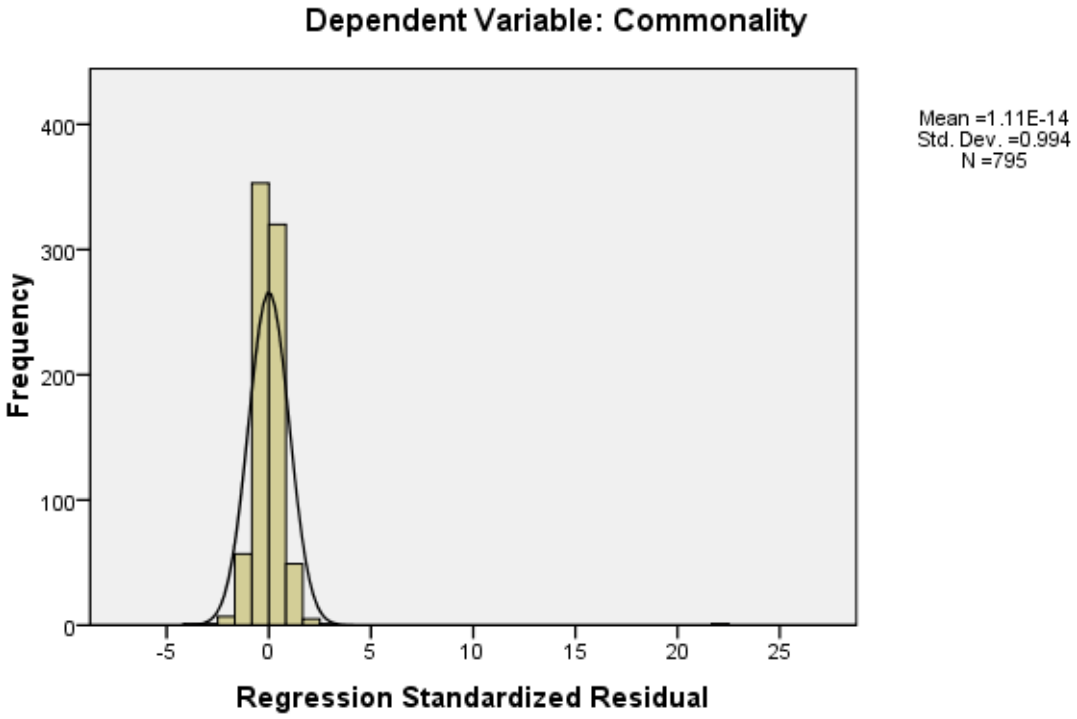
Normal P-P Plot of Regression Standardized Residual



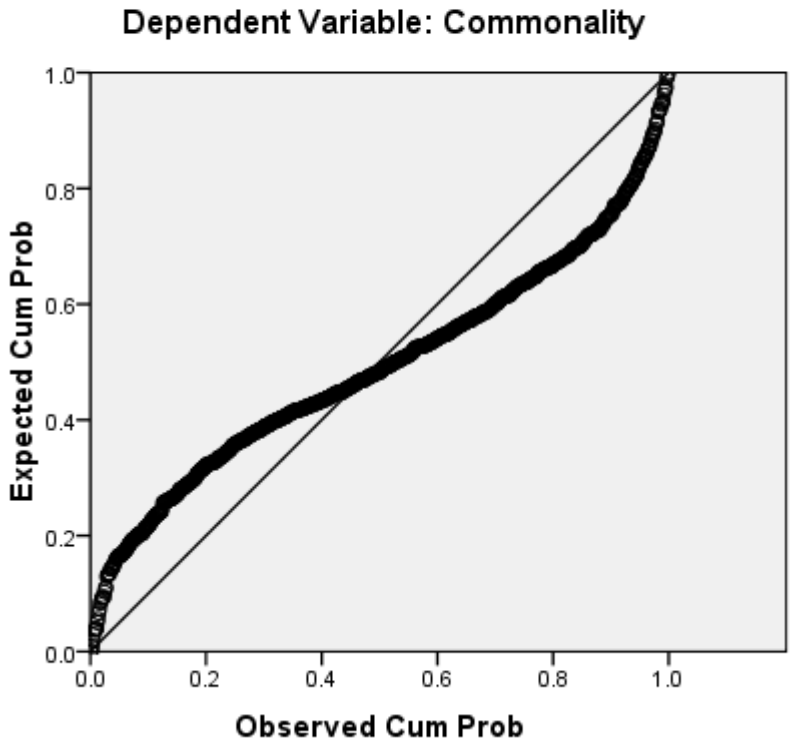


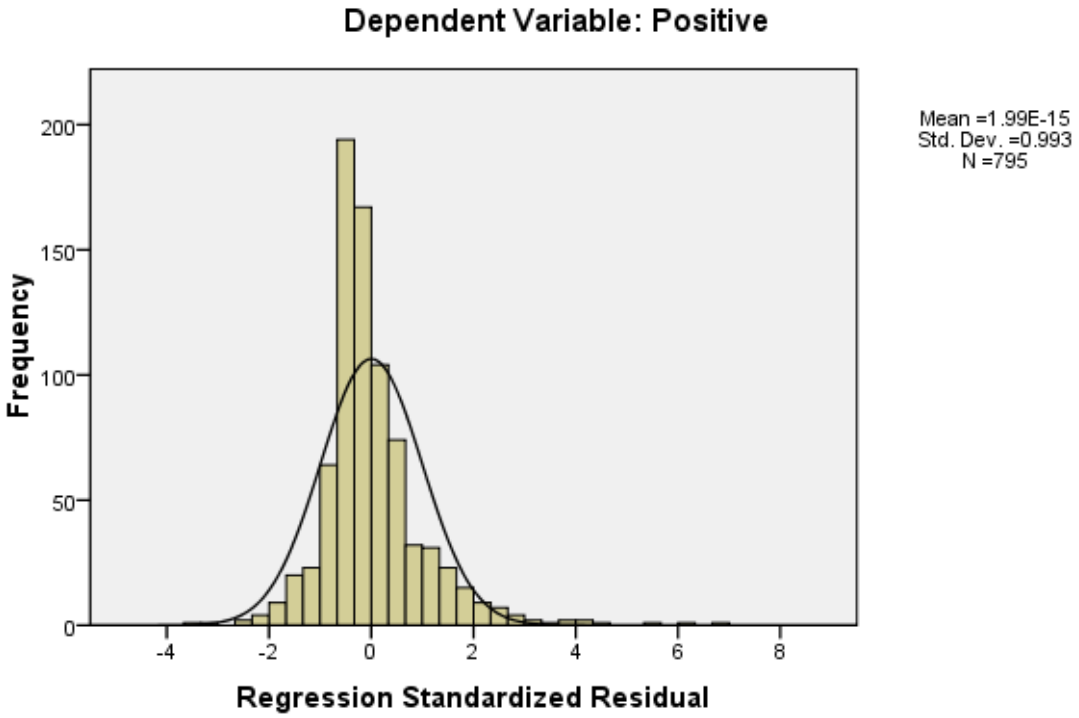
Normal P-P Plot of Regression Standardized Residual



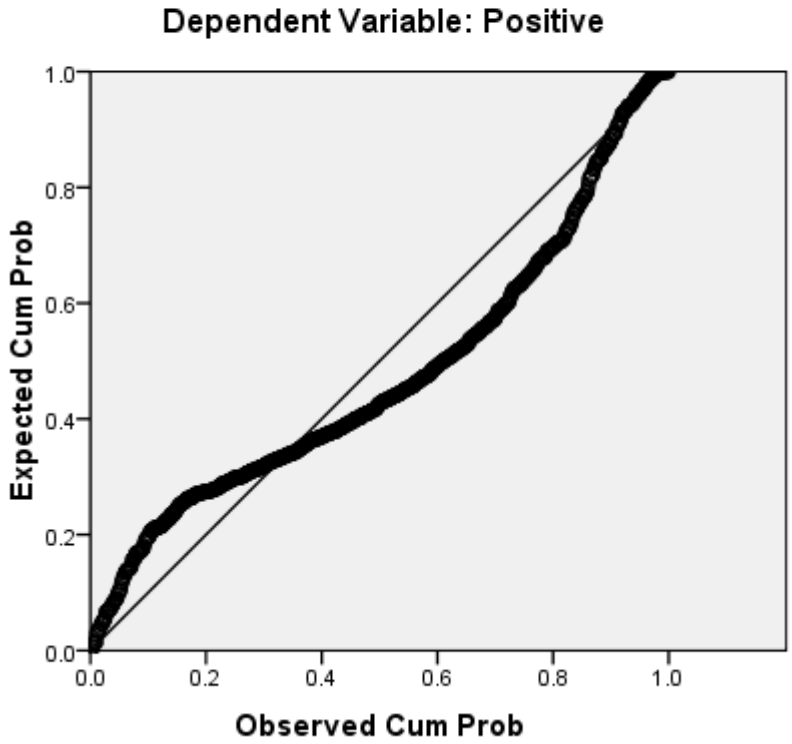


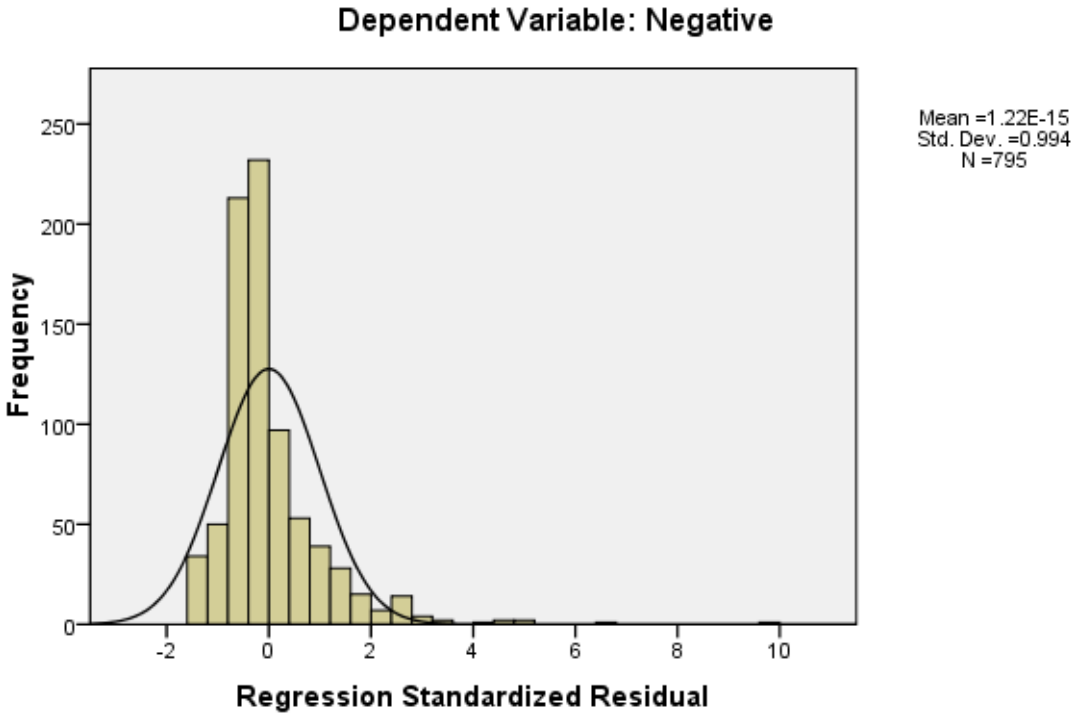
Normal P-P Plot of Regression Standardized Residual



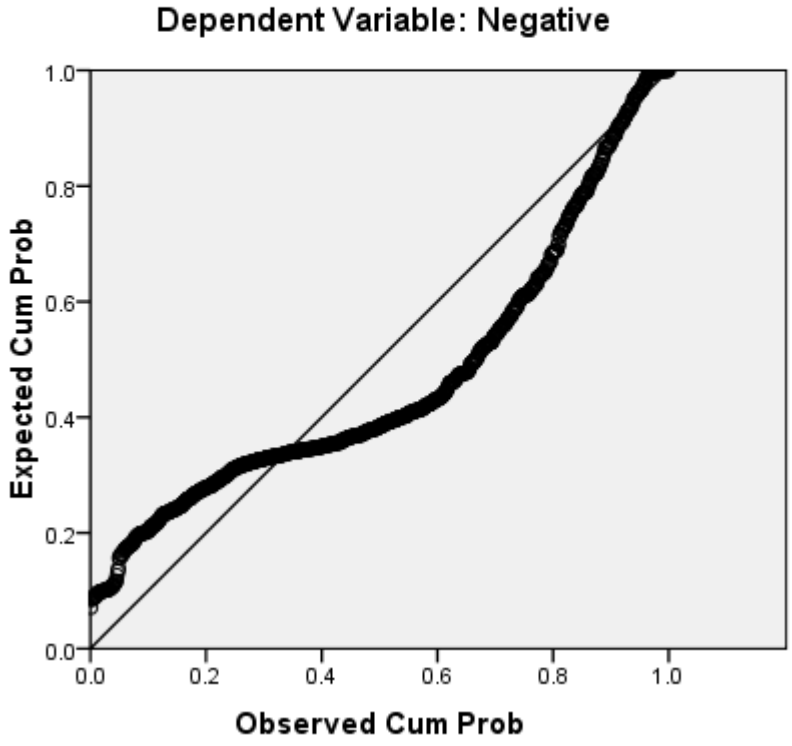


Normal P-P Plot of Regression Standardized Residual





Normal P-P Plot of Regression Standardized Residual



Appendix 6: New Zealand 2006 Highest Qualification Census Results

Population Count Aged 15 Years and Over, 2006

	Population Count	Percent[i]	Cumulative Percent[ii]
No Qualification	708,432	25%	100%
Level 1 Certificate	394,593	14%	76%
Level 2 Certificate	306,327	11%	62%
Level 3 Certificate	247,674	9%	51%
Level 4 Certificate	286,599	10%	42%
Overseas Secondary School	172,590	6%	32%
Level 5 Diploma (Polytechnic)	110,496	4%	26%
Level 6 Diploma (Polytechnic)	157,866	6%	22%
Bachelor Degree and Level 7	315,849	11%	16%
Post-graduate and Honours	55,458	2%	5%
Master's Degree	59,706	2%	2%
Doctorate Degree	16,770	1%	1%
Response Unidentifiable	136,878		
Not Stated	191,136		
Total	3,160,374	100%	

[i] Of valid responses.
[ii] That at least meets that qualification.

Appendix 7: Initial Conversion Error Macro

```
Sub InitialErrorFixes()
With Selection.Find
.Text = "?ow"
.Replacement.Text = "flow"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "in?ue"
.Replacement.Text = "influe"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "in?at"
.Replacement.Text = "inflat"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "re?ect"
.Replacement.Text = "reflect"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?igh"
.Replacement.Text = "fligh"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?ee"
.Replacement.Text = "flee"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?oo"
.Replacement.Text = "floo"
.Forward = True
.Wrap = wdFindContinue
```

```
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?ag"
.Replacement.Text = "flag"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "ni?can"
.Replacement.Text = "nifican"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?na"
.Replacement.Text = "fina"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?ve"
.Replacement.Text = "five"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "Paci?c"
.Replacement.Text = "Pacific"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "pro?t"
.Replacement.Text = "profit"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "o?"
.Replacement.Text = "off"
.Forward = True
.Wrap = wdFindContinue
End With
```

```
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?rst"
.Replacement.Text = "first"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "a?"
.Replacement.Text = "aff"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "di?"
.Replacement.Text = "difi"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?s"
.Replacement.Text = "fis"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "con?"
.Replacement.Text = "confi"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "de?"
.Replacement.Text = "defi"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?rm"
.Replacement.Text = "firm"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
```

```
With Selection.Find
.Text = "?ed"
.Replacement.Text = "fied"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "i?c"
.Replacement.Text = "ific"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "e?e"
.Replacement.Text = "effe"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "e?t"
.Replacement.Text = "efit"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "difier"
.Replacement.Text = "differ"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "reelec"
.Replacement.Text = "reflec"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "brie?ngs"
.Replacement.Text = "briefings"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
```

```
.Text = "?ll"
.Replacement.Text = "fill"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "su?"
.Replacement.Text = "suffi"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?ex"
.Replacement.Text = "flex"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "?at"
.Replacement.Text = "flat"
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
End Sub
```

Appendix 8: Initial Conversion Clean Macro

```
Sub InitialClean()
Selection.Find.Replacement.ClearFormatting
With Selection.Find
.Text = "(^?)"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "^p"
.Replacement.Text = " "
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "(^?^?)"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = ".^#"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "^#"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = ","
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "/"
.Replacement.Text = ""
.Forward = True
```

```
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "\"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "-"
.Replacement.Text = " "
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "_"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "$"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "%"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = ":"
.Replacement.Text = ""
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "."
.Replacement.Text = ".^p"
.Forward = True
.Wrap = wdFindContinue
```

```
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = "^w"
.Replacement.Text = " "
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
With Selection.Find
.Text = " ."
.Replacement.Text = "."
.Forward = True
.Wrap = wdFindContinue
End With
Selection.Find.Execute Replace:=wdReplaceAll
End Sub
```

Appendix 9: Initial Fortescue PDF Sample

Fortescue has secured sales contracts with all of China's Top 10 steel mills and many of the mid tier mills. Since shipping in May 2008, around 30 customers have received product from the Cloudbreak mine. The ore has been well received and the ever increasing supply is just a small step in Fortescue's inexorable march to firmly establish itself as one of the world's major seaborne iron ore providers.

Reflective of the deep engagement the Company has with China, Fortescue recently established a China Advisory Board. The board is chaired by Mr Long Yongtu, Secretary General of the Boao Forum and former Chief Negotiator for China in its entry into the World Trade Organisation. Other members include Mr Robin Chambers who has many years legal experience within China, Mr Cai Rang former Head of the China Institute of Iron & Steel and former Australian Prime Minister Mr Bob Hawke.

RESERVES, RESOURCES AND EXPLORATION

Over 2007-2008 Fortescue more than doubled its tenement portfolio which now stands at approximately 85,000 square kilometres. New ground was granted both within Western Australia and overseas. Many new tenements were granted within the Pilbara region of Western Australia wherein the Hamersley Province is recognised as being the world's best address for iron ore. The Pilbara tenements are segregated into a number of distinct regions including the original east Pilbara project area in the Chichester Ranges which include the deposits of Cloudbreak and Christmas Creek and the more recent western tenements within the Solomon Group.

A large tenement area within the adjoining West Officer Basin region was also applied for by Fortescue, with this area considered prospective for manganese. There were also tenements applied for in the Kimberley region of Western Australia and in New Zealand which are prospective for a number of minerals including iron sands.

Upwards of 97 per cent of the tenements are solely held by Fortescue with joint-venture and share-in, farm-out arrangements for the remainder. A detailed review of the tenement holding is provided on pages 110 and 111.

To date Resource estimates exceeding 4.1 billion tonnes and Reserve estimates exceeding 1.6 billion tonnes have been delineated within only a small part of Fortescue's Pilbara tenement holdings (note the last Reserve upgrade was dated 19th September 2008).

Details of both resources and reserves are shown in the tables below.

Reserve Cloudbreak and Christmas Creek	Tonnes millions	Fe %	Silica %	Alumina %	Phos %	LOI %
Proved	143	59.7	3.52	1.87	0.051	8.19
Probable	1,482	58.8	4.23	2.39	0.057	7.62
TOTAL ALL	**1,625**	**58.9**	**4.16**	**2.35**	**0.053**	**7.33**
Resource Chichester Range	Tonnes millions	Fe %	Silica %	Alumina %	Phos %	LOI %
Measured	150	59.4	3.62	1.95	0.051	8.40
Indicated	1,649	58.5	4.24	2.50	0.055	7.88
Inferred	664	57.7	4.89	2.85	0.060	7.36
Sub Total	**2,463**	**58.2**	**4.46**	**2.61**	**0.056**	**7.71**
Resource Solomon Group	Tonnes millions	Fe %	Silica %	Alumina %	Phos %	LOI %
Inferred	1,715	55.9	7.01	3.49	0.073	8.47
TOTAL ALL	**4,178**					

Appendix 10: Fortescue PDF Converted and Cleaned Sample

Fortescue has secured sales contracts with all of China's Top steel mills and many of the mid tier mills.

Since shipping in May around customers have received product from the Cloudbreak mine.

The ore has been well received and the ever increasing supply is just a small step in Fortescue's inexorable march to firmly establish itself as one of the world's major seaborne iron ore providers.

Reflective of the deep engagement the Company has with China Fortescue recently established a China Advisory Board.

The board is chaired by Mr Long Yongtu Secretary General of the Boao Forum and former Chief Negotiator for China in its entry into the World Trade Organisation.

Other members include Mr Robin Chambers who has many years legal experience within China Mr Cai Rang former Head of the China Institute of Iron & Steel and former Australian Prime Minister Mr Bob Hawke.

Over Fortescue more than doubled its tenement portfolio which now stands at approximately square kilometres.

New ground was granted both within Western Australia and overseas.

Many new tenements were granted within the Pilbara region of Western Australia wherein the Hamersley Province is recognised as being the world's best address for iron ore.

The Pilbara tenements are segregated into a number of distinct regions including the original east Pilbara project area in the Chichester Ranges which include the deposits of Cloudbreak and Christmas Creek and the more recent western tenements within the Solomon Group.

A large tenement area within the adjoining West Officer Basin region was also applied for by Fortescue with this area considered prospective for manganese.

There were also tenements applied for in the Kimberley region of Western Australia and in New Zealand which are prospective for a number of minerals including iron sands.

Upwards of per cent of the tenements are solely held by Fortescue with joint venture and share in farm out arrangements for the remainder.

A detailed review of the tenement holding is provided on pages and.

To date Resource estimates exceeding billion tonnes and Reserve estimates exceeding billion tonnes have been delineated within only a small part of Fortescue's Pilbara tenement holdings (note the last Reserve upgrade was dated th September).

Details of both resources and reserves are shown in the tables below.

Additional Research: Trans-Tasman

Table of Extra Tables

Table of Extra Tables

New Zealand

Readability

Lack of data in utilised databases and rare conversion issues with some of the PDF reports resulted in a final data set of 39 companies from the NZX50. From this company set 255 individual disclosures were identified and extracted. Extra table 1 (below) reveals the disclosure representation. As expected, the data set is dominated by annual report sub-sections with relatively little CSR disclosures. Variations in the number of disclosures that were found in the same correspondence (e.g. annual reports) are due to them being missing in the original report (such as no chairman letter in an annual report) or being converted inaccurately, leading to their exclusion from analysis.

Extra Table 1: New Zealand Disclosure Representation

	Frequency	Percent
Annual Report CSR	7	2.7
CSR Report Opening letter	13	5.1
CSR Report Remaining	13	5.1
Annual Report Chairman	69	27.1
Annual Reports' notes	75	29.4
Annual Report Discussion	78	30.6
Total	255	100.0

Surprising CSR disclosure sections in annual reports were the smallest disclosure sample, occurring less often than standalone CSR reports and making up just 2.7% of the total data set. Only around 9% of the studied reports included a CSR section and often it was the reports of companies that also issued standalone CSR reports.

When the data set is broken down into the individual industries (as shown in table 6 on the following page) the services and investment/finance sectors are shown to provide the majority of disclosures (representing 34.5% and 24.1% of disclosures respectively). The energy, primary and goods sectors sit in the middle ground making up 11%, 12.6% and 14.5% of disclosures respectively while the industrial sector had very little representation at just 2.4%.

Extra Table 2: New Zealand Industry Composition

	Ann. CSR		CSR Ope.		CSR Main		Chair		Discu.		Notes		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Industrial	0	0	0	0	0	0	2	.8	2	.8	2	.8	6	2.4
Energy	2	.8	2	.8	2	.8	7	2.7	8	3.1	7	2.7	28	11.0
Primary	1	.4	1	.4	1	.4	10	3.9	10	3.9	9	3.5	32	12.6
Goods	2	.8	2	.8	2	.8	8	3.1	12	4.7	11	4.3	37	14.5
Invest./Fin.	0	0	2	.8	2	.8	20	7.8	20	7.8	20	7.8	64	25.1
Services	2	.8	6	2.4	6	2.4	22	8.6	26	10.2	26	10.2	88	34.5
Total	7	2.7	13	5.1	13	5.1	69	27.1	78	30.6	75	29.4	255	100

Accounting for the varying levels of industry representation in the data set reveals that the energy sector had the greatest proportion of CSR disclosures with 21% of disclosures in this industry being CSR related (6/28). Goods and services had similar rates of 16% (6/37) and 14% (13/88) respectively. However, the primary, investment/finance and industrial sectors had the poorest rates of 9% (3/32), 6% (4/64) and 0% (0/6) respectively. Interestingly the industrial and investment/finance sectors were the only industry sectors to have no significant CSR sections in their annual reports, and the industrial sector was the only industry to have no stand-alone CSR reports.

Extra table 3 (on the following page) presents the descriptive statistics for the readability formulae as well as the major control/independent variables. The length of disclosures was captured by a word count, the average being 7,807 words. However, there was considerable range and variance in these counts with the smallest disclosure containing just 43 words and the largest containing 56,808 words.

Interpreting the average Flesch score of 32 would suggest an undergrad to post-grad education would be required to read the disclosures effectively. Likewise, the grade scores provided by the Flesch Kincaid, Fog and Smog formulae suggest that the equivalent of a 14-18 grade level education would be required to read the disclosures effectively.

Extra Table 3: NZ Summary Descriptive Statistics

	N	Minimum	Maximum	Range	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Dev.
Flesch	255	7.00	56.00	49.00	32.73	7.086
Flesch Kincaid	255	10.00	19.80	9.80	14.28	1.478
Fog	255	12.80	24.20	11.40	17.52	1.607
Smog	255	11.10	20.60	9.50	15.69	1.204
Current Ratio	255	.09	13.67	13.58	1.61	1.595
Solvency	255	-114.01	89.04	203.05	38.04	32.358
Market Value $NZ	255	37747200	7.8E10	7.78E10	6.52E9	1.6E10
Profit Margin[1]	255	-336580	135	336715	-4338	36493
ROA	255	-21.26	28.20	49.46	5.81	8.409
ROE	255	-115.07	174.99	290.06	13.10	34.800
Total Word Count	255	43.00	56808	56765	7806.9	9696.5

[1]This statistic is skewed by a outlier value from Pike River Coal, excluding this the mean is 6.76%

In extra appendix 1 the results of the Mann–Whitney U test are given. The Mann–Whitney U test is a non-parametric statistical hypothesis test for assessing whether a sample of independent observations tends to have larger or smaller values than another. The Mann-Whitney test ranks all the scores from low to high, with tied results getting the average of the two ranks for which they tie. The smallest score gets a rank of one; the largest score a rank of N (where N is the total number of values in the two groups). The test then sums the ranks in each group, and reports the two sums. If the sums of the ranks are significantly different then the P value is small. This test is used as an attempt to determine if the readability of a given disclosure type is significantly different from the rest of the disclosure types. These results found significant differences in disclosure type's readability.

Based on this finding the major descriptive statistics were split into the separate disclosure types to explore how they differed (shown in extra table 4). Surprisingly, the results suggested CSR disclosures were the most complicated texts. CSR reports opening letters are the most difficult text to read, requiring at least a grade of 15.88 to read, based on the grade formulae. Annual reports' CSR disclosures were almost as bad with results suggesting that at least a grade of 15.44 would be required. However, CSR reports main sections did score a lot better, with results suggesting that the lowest grade level required to read these disclosures effectively was 14.11, the second best score.

As suggested by previous research, chairman's letters were the most readable disclosure with a minimum grade level of 13.77, 2.11 grade levels less than poorest scoring disclosures (CSR opening letters). The remaining disclosures, annual reports' notes and discussion sections, required grade levels of at least 14.48 and 14.2 respectively.

The length indicator showed the CSR reports' main sections recorded the largest word count of 15,224 words on average (unsurprising given these represent the majority of CSR reports). However, the large standard deviation of 10,410 suggests considerable variation. The notes section of annual reports were the second largest with an average of 12,887 words being on average 12% smaller than CSR main sections. Annual reports' discussion sections averages 9,347 words while the annual reports' CSR sections averaged 3,131 words. As expected, the chairman's letters and the opening letters of CSR reports had the least words, averaging just 979 and 597 words respectively.

Extra Table 4: NZ Descriptive Statistics (Split by Disclosure)

		Flesch	Flesch Kincaid	Fog	Smog	Total Words	MV Bill NZ$
AR CSR	Mean	26.00	15.44	18.34	16.24	3131	2.26
	Std. Dev	9.52	1.64	1.90	1.42	1724	.4745
Chair	Mean	37.30	13.77	17.17	15.23	979	4.11
	Std. Dev	7.94	1.76	2.04	1.48	743	13.44
CSR Open	Mean	24.92	15.88	19.11	16.50	597	23.38
	Std. Dev	9.34	2.08	2.19	1.57	187	25.08
CSR Main	Mean	32.46	14.11	16.95	15.17	15224	23.38
	Std. Dev	6.08	1.28	1.23	0.85	10410	25.09
Disc	Mean	32.19	14.20	17.54	15.65	9347	4.90
	Std. Dev	6.24	1.33	1.47	1.13	10603	14.24
Notes	Mean	31.11	14.48	17.58	16.06	12887	4.97
	Std. Dev	2.98	0.86	0.89	0.66	9718	14.51

The average market values for the separate disclosures also suggest some interesting patterns in CSR disclosures. Annual reports' CSR disclosures have the smallest mean value of NZ$2.26 bill, suggesting that the smaller companies tended to include CSR disclosures in their annual reports more than the larger companies did. On the other end of the scale, CSR reports' opening letters and remaining sections registered a mean of NZ$23.38 bill, suggesting the largest companies in the NZX50 utilised standalone CSR reports.

Bi-Variate Analysis

As previously mentioned, I cannot reasonably assume the normality of my data set so both Kendall's tau and Spearman's rho correlations are used as they do not require normality of data and are less influenced by outliers and unequal variances (compared to Pearsons). Unsurprisingly, the complete Kendall's tau and Spearman's rho correlation tables were beyond the presentation limitations of a thesis so a summarised table displaying the significant correlations with dependent variables is included below as extra table 5.

As one would expect, the four readability measures were highly correlated with one another. What are of interest are the correlations between these variables and the independent/control variables, of which there are three.

Extra Table 5: Bi-variate correlation summary for dependent variables

Variable	Spearman's rho correlation	Kendall's tau correlation
Flesch	**Words (-.313), Flesch Kincaid (-.869), Fog (-.841), Smog (-.862), MV (-.251)** Solvency (.134), ROE (.135),	**Words (-.238), Flesch Kincaid (-.729), Fog (-.691), Smog (-.720), MV (-.177)** Solvency (.097), ROE (.095),
Flesch Kincaid	**Words (.243), Flesch (-.869), Fog (.958), Smog (.941), MV (.185), ROE (-.187)** Fut. ROE (-.151)	**Words (.182), Flesch (-.729), Fog (.846), Smog (.820), MV (.126), ROE (-.129)** Fut. ROE (-.101)
Fog	**Words (.164), Flesch (-.841), Flesch Kincaid (.958), Smog (.948), ROE (-.204), Fut. ROE (-.167)** MV (.128)	**Words (.117), Flesch (-.691), Flesch Kincaid (.846), Smog (.834), ROE (-.139), Fut. ROE (-.112)** MV (.085)
Smog	**Words (.288), Flesch (-.862), Flesch Kincaid (.941), Fog (.948), ROE (-.190), Fut. ROE (-.182)**	**Words (.210), Flesch (-.720), Flesch Kincaid (.820), Fog (.834), ROE (-.129), Fut. ROE (-.124)**

Variables in bold were found statistically significant at the .01 level, else significant at the .05 level

The disclosures length (words) had a significant (.01) correlation with the disclosures ultimate readability (based on all four indicators) with the direction suggesting that the larger the disclosure the less readable it is.

Market Value had significant correlations with three of the four readability indicators (four at .01 and two at the .05 level). These results would suggest that smaller companies issued disclosures that are more readable compared to the larger companies that tended to have less readable disclosures.

The final correlations found were with the profitability indicator ROE. Current ROE was correlated with all readability indicators while future ROE was found correlated with three of the four readability indicators. The directions suggest that higher ROE (both in the current year and in the future) were associated with disclosures that are more readable. This would support the obfuscation hypothesis and hypothesis 1a (alternative). That is, poorly preforming companies attempt to obfuscate their performance by issuing disclosures that are harder to read.

Thematic

This section presents the thematic results of the New Zealand data set. As the thematic data is collected from the exact same disclosures and company sets as the readability scores this section only presents the thematic statistics. Industry representations etcetera can be found in the chapter above.

Extra table 6 (below) presents the descriptive statistics for the thematic indicator variables. As expected by the Pollyanna principle, the use of positive language in disclosures was considerably more than negative language with an average of 5.7 positive words per 500 compared to an average of 1.2 words of negative language.

Extra Table 6: NZ Thematic Descriptive Statistics (Total Sample)

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Deviation
Activity	255	48.07	6.45	54.52	48.89	4.0172
Certainty	255	21.56	40.75	62.31	52.07	3.9052
Commonality	255	20.19	45.21	65.40	52.99	3.0969
CSR Word Count	255	32.75	.00	32.75	6.83	6.1612
Negative	255	15.00	.00	15.00	1.23	1.8233
Optimism	255	20.11	42.80	62.91	51.10	2.4469
Positive	255	30.00	.00	30.00	5.66	5.4136
Realism	255	47.14	13.88	61.02	45.52	3.5118

The mean Commonality, Certainty and Optimism counts were 52.99, 52.07 and 51.10 respectively; representing the three largest counts. This suggests that disclosures used a large amount of language that was authoritative, resolute, endorsing and collective. While Activity and Realism had the smallest word counts of 48.9 and 45.5 respectively, suggesting (relative

to the use of Commonality, Certainty and Optimism) less use of language that features change or progress and tangible or immediate language. At this stage, as there is little to no relevant data on these variables to compare with, no more can really be drawn from these results.

Extra table 7 (below) splits the thematic variables descriptive results into the separate disclosure types. The five master DICTION variables had only minor variations in the average counts when split up like this. The greatest range, being 6.1 for Certainty, represented just 12.7%. Despite the small differences, the Mann–Whitney U tests presented in extra appendix 1 do suggest that there are significant differences in the thematic content of the disclosure types, for details please see chapter 5.

Extra Table 7: NZ Descriptive Statistics (Split by Disclosure)

		Activity	Optim.	Certain.	Realism	Commo.	Positive	Negativ.	CSR
AR	Mean	51.1	54.0	49.1	44.6	52.3	8.2	0.9	15.4
CSR	Std. Dev.	2.5	3.8	4.0	2.9	1.8	8.9	0.7	9.2
Chair	Mean	48.7	52.6	50.3	47.1	51.7	10.9	2.2	4.9
	Std. Dev.	3.6	2.2	3.7	2.8	2.4	6.2	2.4	5.0
CSR	Mean	49.3	54.2	48.1	47.5	51.6	7.4	0.9	15.3
Open	Std. Dev.	7.4	3.1	3.4	4.3	2.3	3.3	1.0	7.5
CSR	Mean	49.8	51.1	50.1	42.1	51.9	4.6	1.3	12.0
Main	Std. Dev.	2.1	0.8	3.6	8.8	3.2	1.7	1.9	5.2
Disc	Mean	48.4	50.7	52.9	45.2	53.7	3.8	0.8	8.3
	Std. Dev.	5.3	1.9	3.5	2.6	3.5	3.2	1.8	6.1
Notes	Mean	49.2	49.4	54.2	44.8	53.9	2.4	0.9	3.8
	Std. Dev.	1.7	1.2	3.1	2.5	3.0	2.2	1.0	3.0
Range		2.7	4.9	6.1	5.4	2.4	8.4	1.4	11.6

Evidence of the Pollyanna principle was present under all disclosure types with negative affirmation words occurring on average 5 times less often the positive. The chairman's letters used the most positive language with an average of 10.87 positive words per 500. Annual reports' CSR disclosures and CSR opening letters also utilised a lot of positive language with positive word counts of 8.23 and 7.43 respectively. Annual reports' discussion sections and the financial notes recorded the smallest use of positive words with counts of 3.81 and 2.43 respectively.

While the chairman's letter utilised the most positive language it also utilised the greatest negative words with an average count of 2.16 words. CSR reports' main sections scored the second highest count, using 1.27 negative words, while CSR reports' opening letters utilised the least negative affirmation words, just .87 words per 500.

As expected, the CSR count was largest within the CSR disclosures with annual report CSR disclosures having 15.4 words per 500, CSR reports opening letters having 15.3 and CSR reports main sections having 12. The annual reports financial notes had the lowest CSR count of just 3.8 words.

Bi-Variate Analysis

Extra table 8 presents the Kendall's tau and Spearman's rho correlations both of which suggest some interesting relationships. Dictions five master variables had interesting relationships with the readability indicators and the other independent/control variables, each of these are briefly discussed below.

Extra Table 8: Bi-variate correlation summary for dependent variables

Variable	Spearman's rho correlation	Kendall's tau correlation
Activity	**CSR (.210), ROA (.170)** Fut. ROA (.144)	**CSR (.147), ROA (.113)** Fut. ROA (.097)
Certainty	**Words (.323), Optimism (-.385), Realism (-.228), Commonality (.316), Positive (-.392), Flesch (-.189), Smog (.238)** Negative (-.127), Fog (.126), CSR (-.159), ROA (.161)	**Words (.218), Optimism (-.276), Realism (-.154), Commonality (.213), Positive (-.272), Flesch (-.129), Smog (.161), CSR (-.112)** Negative (-.089), ROA (.108)
Commonality	**Words (.175), Optimism (-.264), Certainty (.316), Realism (-.366), Positive (-.330), Negative (-.259), Flesch (-.228), Smog (.209)** Fog (.147), MV (-.146)	**Words (.118), Optimism (-.169), Certainty (.213), Realism (-.257), Positive (-.221), Negative (-.176), Flesch (-.162), Smog (.146)** Fog (.103), MV (-.102)
CSR Count	**Activity (.210), Optimism (.230), Flesch (-.214), Flesch Kincaid (.182), MV (.208), Profit (.183), Fut. Profit (.189)** Certainty (-.159), Positive (.129), Fog (.161), ROA (.147), Fut. ROA (.125)	**Activity (.147), Optimism (.161), Certainty (-.112), Flesch (-.153), Flesch Kincaid (.128), Fog (.110), MV (.139), Profit (.124), Fut. Profit (.129)** Positive (.090), ROA (.099)
Negative	**Realism (.203), Commonality (-.259), Positive (.313)** Certainty (-.127), Flesch (.138), Smog (-.124)	**Realism (.137), Commonality (-.176), Positive (.216)** Certainty (-.089), Flesch (.099), Smog (-.087)
Optimism	**Words (-.456), Certainty (-.385), Realism (.222), Commonality (-.264), Positive (.624), Flesch (.165), Smog (-.176), CSR (.230)**	**Words (-.325), Certainty (-.276), Realism (.149), Commonality (-.169), Positive (.459), Flesch (.113), Smog (-.125), CSR (.161)**
Realism	**Words (-.358), Optimism (.222), Certainty (-.228), Commonality (-.366), Positive (.262), Negative (.203), Flesch (.471), Flesch Kincaid (-.271), Fog (-.270), Smog (-.339)**	**Words (-.241), Optimism (.149), Certainty (-.154), Commonality (-.257), Positive (.175), Negative (.137), Flesch (.335), Flesch Kincaid (-.188), Fog (-.187), Smog (-.238)**
Positive	**Words (-.476), Optimism (.624), Certainty (-.392), Realism (.262), Commonality (-.330), Negative (.313), Flesch (.321), Flesch Kincaid (-.253), Fog (-.213), Smog (-.356)** CSR (.129)	**Words (-.328), Optimism (.459), Certainty (-.272), Realism (.175), Commonality (-.221), Negative (.216), Flesch (.213), Flesch Kincaid (-.169), Fog (-.140), Smog (-.238)** CSR (.090)

Correlations in bold were found statistically significant at the .01 level, else significant at the .05 level

The Activity variable was found to have a significant correlation with CSR word counts implying that disclosures that had more CSR words featured more language that emphasised movement, change, and implementation of new ideas. Further, a significant correlation was found with both current ROA and future ROA; suggesting use of Activity based language is related to increased profitability.

Certainty had significant correlations with both positive and negative counts, CSR word counts, several other DICTION variables and most of the readability indicators. These correlations suggested that the use of language that indicates resoluteness, inflexibility, or completeness were positively correlated with both the size of the disclosure (larger disclosures contained higher rates of Certainty) and the company's underlying performance (more profitable companies' disclosures contained more Certainty). Negative relationships exist with CSR counts, readability and the use of both positive and negative words, implying that as these increased the frequency of Certainty in disclosures decreased (and visa-versa).

Commonality (language that highlights the agreed upon values of a group) was positively correlated to the size of disclosures suggesting that longer disclosures emphasised Commonality language. However, negative correlations were discovered with readability, the size of the company and, finally, both negative and positive word usage. This suggests that the language used to convey Commonality was less readable, not used in combination with positive or negative references and was utilised less by larger companies (which would go against legitimacy theory, see page 7).

Optimism had positive correlations with readability, positive word use and CSR counts. Suggesting that language that endorsed a person, group, concept, and event or highlighted their positive entailments was easier to read and often concerned CSR matters. Negative correlations were found with the size of the disclosure suggesting that Optimism was often conveyed in shorter disclosures.

Realism, which measured the use of language that concerned tangible, immediate and recognisable matters, was positively correlated with Optimism, the use of both positive and negative words and readability. This would suggest that reference to positive or negative elements was often used regarding tangible/recognisable matters and such disclosures were

often more readable (which suggests companies want you to know about these matters). Negative correlations existed with the size of the disclosures (suggesting larger disclosures referred to less recognisable matters) and, both Certainty and Commonality.

The CSR count had many positive correlations. The positive correlations with the DICTION variables Activity and Optimism suggested that the use of language they indicate was more common in CSR matters while the positive correlation with positive word use suggests CSR matters were often positive in nature. The final positive correlations with the size of the firm and profitability (both current and future) suggest that larger companies seemed to disclose more CSR matters and likewise, companies that are more profitable disclosed additional CSR matters. Negative relationships were found with Certainty and readability, supporting the trend identified in the descriptive statistics that CSR disclosures were generally less readable.

Positive word use was found positively correlated with the DICTION variables Optimism and Realism but also negative word use, CSR counts and readability. The correlation with negative words is interesting as it suggests that higher levels of negative language is associated with higher levels of positive language, this may indicate that the increased use of positive language is an attempt to overpower the negative occurrences. The correlation with CSR counts suggests that CSR matters are often presented in a positive light (positive framing) while the correlation with readability supports the obfuscation hypothesis, as this would suggest that readability improves in positive disclosures and decreases in less positive disclosure. Negative correlations were found with the DICTION variables Certainty and Commonality as well as the length of disclosures; this final correlation would suggest positive outcomes were presented in shorter disclosures while longer disclosures typically had less positive outcomes. Although my data cannot identify why this is the case, it may be that less positive outcomes are obscured in longer disclosures.

Negative word use had positive correlations with Realism, and both readability and positive language. This suggests that negative outcomes were not hidden behind poor readability but rather (as previously discussed) were obscured by the use of additional positive language. Negative correlations were found with the DICTION variables Commonality and Certainty suggesting language indicated by these were used without connection to negative outcomes.

Australia

Readability

Similar to the New Zealand data, the lack of complete data in utilised databases and rare conversion issues resulted in a final company set of 85 companies from the ASX100. From this company set 568 individual disclosures were extracted with the frequencies shown in extra table 9 below.

Extra Table 9: Australia Disclosure Frequencies

	Frequency	Percent
Annual Report CSR	52	9.1
CSR Report Opening letter	41	7.0
CSR Report Remaining	47	8.1
Annual Report Chairman	118	20.9
Annual Reports' notes	158	27.8
Annual Report Discussion	152	26.7
Total	568	100.0

Similar to the New Zealand data set the Australian data set is dominated by annual report sub-sections with relatively little standalone CSR reports being available. However, as a ratio more CSR reports were available with 15.1% of disclosures in this data set being extracted from CSR reports compared to just 10.2% in New Zealand's data set. Likewise, the proportion of annual report CSR disclosure sections was more than three times the rate in New Zealand with almost a third of Australian annual reports including CSR disclosure sections compared to just a tenth of New Zealand annual reports.

Industry representation for the Australian data set is shown in extra table 10 (on the following page). Relative to New Zealand's data set, Australia's industry representation is more even with all but the energy and primary sectors representing around 20% of disclosures (energy and primary represented 9.3% and 7.4% respectively). While industrial representation was just 2.4% in New Zealand's data set, it is the largest sector represented in the Australian data set, making up 24.1%.

Extra Table 10: Australia Industry Composition

	Ann. CSR		CSR Ope.		CSR Main		Chair		Discu.		Notes		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Industrial	14	2.5	14	2.5	14	2.5	24	4.2	34	6.0	37	6.5	137	24.1
Energy	5	0.9	7	1.2	7	1.2	12	2.1	11	1.9	11	1.9	53	9.3
Primary	3	0.5	3	0.5	4	0.7	9	1.6	12	2.1	11	1.9	42	7.4
Goods	9	1.6	8	1.4	11	1.9	21	3.7	25	4.4	26	4.6	100	17.6
Invest./Fin.	12	2.1	7	1.2	9	1.6	24	4.2	32	5.6	32	5.6	116	20.4
Services	9	1.6	2	0.4	2	0.4	28	4.9	38	6.7	41	7.2	120	21.1
Total	52	9.2	41	7.2	47	8.3	118	20.8	152	26.8	158	27.8	568	100

Looking for trends regarding CSR disclosures, there appears to be much more consistent reporting in Australia compared to New Zealand. Once again, controlling for the varying levels of industry representation, the energy sector had the greatest proportion of CSR disclosures at 36% (19/53). Industrial, primary and investment/finance published considerably more CSR disclosures compared to their New Zealand counterparts with CSR disclosure ratios of 30% (42/137), 28% (28/100), 24% (10/42) and 24% (28/116) respectively. The services sector was by far the worst in terms of CSR disclosure proportions with just 11% (13/120) of their disclosures being expressly CSR related.

Extra table 11 (on the following page) presents Australia's descriptive statistics for the readability formulae as well as the major control/independent variables. Disclosure samples from Australia were considerably larger with an average word count of 9,696 compared to New Zealand's 7,807 (24% larger); although once again there was considerable range and variance in the counts with the smallest disclosure containing just 127 words and the largest containing 95,181 words.

Similar to New Zealand, the grade scores for the Flesch Kincaid, Fog and Smog ranged from 10.8 (Flesch Kincaid) through to 24.4 (Fog). However, the average result suggests that the equivalent of a 15-19 grade level education would be required to read the disclosures effectively (about a grade level higher than New Zealand). Likewise, interpretation of the average Flesch score (27.5) suggests Australia's text samples were, on average, less readable. As one might expect, the average market value of Australian disclosures was considerably larger than New Zealand's at NZ$13.5 bill compared to NZ$6.5 bill.

Extra Table 11: Australia Summary Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Deviation
Flesch	569	47	1	48	27.51	7.87
Flesch Kincaid	569	10.70	10.80	21.50	15.40	1.87
Fog	569	11.40	13.00	24.40	18.67	1.92
Smog	569	8.30	12.60	20.90	16.48	1.42
Current Ratio	551	19.18	.02	19.20	1.60	1.90
Solvency	554	95.27	-2.02	93.25	43.78	19.63
Market Value $NZ	554	2.00E11	1.21E8	2.00E11	1.35E10	2.56E10
Profit Margin	547	984.00	-792.00	192.00	-.608	91.45
ROA	549	94.37	-47.06	47.31	3.97	10.73
ROE	549	1299.62	-78.62	1221.00	18.65	92.81
Total Word Count	569	95054	127	95181	9696	10437

As mentioned at the beginning, the results chapter the descriptive statistics of the independent and control variables shown do not represent that of the ASX100 or any other population; rather they are for my set of disclosures. As such, while they are included in table 15, I will not provide any commentary on them at this stage.

The Mann–Whitney U tests are included as extra appendix 2. Similar to the New Zealand tests, they suggest there are statistically significant differences in the disclosure type's readability. Extra table 12 (on the following page) provides the descriptive statistics for the readability indicators, the length of disclosures and market value, separated into the individual disclosure types. Unlike in the New Zealand data set, Australian stand-alone CSR disclosures were (in general) more readable than the majority of the annual report sections (chairman letter, discussion sections and financial notes sections) and at least a grade level easier to read than the annual report CSR sections. However, Australian chairman letters, discussion sections, financial notes and annual report CSR disclosures were more complicated than their New Zealand equivalents.

As previously found, Australian disclosures generally contained more words than their New Zealand counterparts did. However, annual reports' CSR disclosures were actually smaller with, on average, just 1,917 words compared to New Zealand's 3,131; this result is very interesting given that in every other regard Australian companies disclosed more CSR. As found in the New Zealand data set, larger companies seemed to utilise stand-alone CSR

reports, with CSR reports' opening letters and remaining sections having an average market value of NZ$24 and NZ$22 billion respectively compared to the remaining disclosures that ranged from NZ$11.3 to NZ$11.9 billion.

Extra Table 12: Australian Descriptive Statistics (Split by Disclosure)

		Flesch	Flesch Kincaid	Fog	Smog	Total Words	MV NZ$
AR CSR	Mean	22.04	15.88	18.83	16.49	1917.48	1.17E10
	N	52	52	52	52	52	50
	Std. Dev	7.244	1.668	1.748	1.250	1546.12	1.72E10
Chair	Mean	34.10	14.34	17.77	15.70	1084.35	1.18E10
	N	119	119	119	119	119	116
	Std. Dev	7.565	1.575	1.732	1.218	712.56	1.25E10
CSR Open	Mean	30.63	14.55	17.48	15.52	732.10	2.42E10
	N	41	41	41	41	41	41
	Std. Dev	8.037	1.759	1.591	1.192	449.32	3.95E10
CSR Main	Mean	27.80	14.71	17.67	15.71	11714.60	2.23E10
	N	47	47	47	47	47	47
	Std. Dev	6.968	1.439	1.518	1.077	9778.19	3.72E10
Disc	Mean	27.28	15.25	18.83	16.53	12999.20	1.13E10
	N	152	152	152	152	152	147
	Std. Dev	5.220	1.369	1.499	1.083	10129.31	2.15E10
Notes	Mean	23.68	16.61	19.74	17.50	17288.73	1.19E10
	N	158	158	158	158	158	153
	Std. Dev	6.828	1.980	2.021	1.373	9958.03	2.40E10

Bi-Variate Analysis

Extra table 13 presents the Spearman's rho and Kendall's tau correlations for the four readability indicators based on the Australian data. As was the case in the New Zealand data, the four readability indicators are all significantly correlated with one another. The only other correlations were with company size (MV) and performance indicators, which are very similar to the New Zealand results.

Extra Table 13: Australian Bi-variate correlation summary for dependent variables

Variable	Spearman's rho correlation	Kendall's tau correlation
Flesch	**Words (-.374), Flesch Kincaid (-.907), Fog (-.867), Smog (-.868), Fut. Profit (.129), Fut. ROE (.126), Fut. ROA (.145)** MV (.107)	**Words (-.270), Flesch Kincaid (-.767), Fog (-.710), Smog (-.721), Fut. Profit (.089), Fut. ROE (.087), Fut. ROA (.099)** MV (.074)
Flesch Kincaid	**Words (.381), Flesch (-.907), Fog (.968), Smog (.970), ROE (-.127), ROA (-.115), MV (-.162), Fut. Profit (-.145), Fut. ROE (-.132), Fut. ROA (-.152)** Profit (-.087)	**Words (.269), Flesch (-.767), Fog (.866), Smog (.874), ROE (-.086), ROA (-.080), MV (-.109), Fut. Profit (-.101), Fut. ROE (-.089), Fut. ROA (-.103)** Profit (-.061)
Fog	**Words (.401), Flesch (-.867), Flesch Kincaid (.968), Smog (.982), ROE (-.153), ROA (-.152), MV (-.183), Fut. Profit (-.155), Fut. ROE (-.145), Fut. ROA (-.175)** Profit (-.106)	**Words (.282), Flesch (-.710), Flesch Kincaid (.866), Smog (.905), ROE (-.104), ROA (-.105), MV (-.123), Fut. Profit (-.107), Fut. ROE (-.097), Fut. ROA (-.119)** Profit (-.074)
Smog	**Words (.461), Flesch (-.868), Flesch Kincaid (.970), Fog (.982), ROE (-.158), ROA (-.152), MV (-.189), Fut. Profit (-.158), Fut. ROE (-.145), Fut. ROA (-.173), Profit (-.112)**	**Words (.328), Flesch (-.721), Flesch Kincaid (.874), Fog (.905), ROE (-.107), ROA (-.104), MV (-.127), Fut. Profit (-.109), Fut. ROE (-.097), Fut. ROA (-.117), Profit (-.078)**

Variables in bold were found statistically significant at the .01 level, else significant at the .05 level

The only noteworthy difference in these results is that all three indicators for future profitability (Fut. ROE, Fut. ROA and Fut. Profit) had correlations with all readability indicators at the .01 level suggesting a positive relationship. This suggests that readability may be influenced by the provision of useful incremental information about future performance. Other than that, the exact same correlations and relationships appear to exist.

Thematic

Extra table 14 provides the thematic descriptive statistics for the Australian sample. The average counts are almost an exact match to those found of the New Zealand data with all results rounding to the exact number of whole words, with the exception of Realism. Realism's average count was just two words less than the New Zealand equivalent (4% less).

Extra Table 14: Australia Thematic Descriptive Statistics (Total Sample)

	N	Range	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Deviation
Activity	569	62.53	.00	62.53	49.08	4.3081
Certainty	569	33.04	40.64	73.68	51.92	4.2845
Commonality	569	118.18	35.19	153.37	52.64	5.2515
Negative	569	8.50	.00	8.50	1.09	1.4049
Optimism	569	21.78	43.74	65.52	51.10	2.4563
Positive	569	35.91	.00	35.91	5.68	5.6091
Realism	569	23.18	28.96	52.14	44.03	2.9594

Extra appendix 2 presents the Mann–Whitney U test results applied to the different Australian disclosures as used in the New Zealand analysis. Similar to New Zealand, they show that there are significant differences present in the disclosures on at least some of the thematic variables, if not all. Extra table 15 (on the following page) splits the descriptive results into these different disclosure types to better identify the differences. Also similar to the New Zealand data set, there were only small variances in the average DICTION variables, with the greatest being just 5.3 words (Certainty).

Regarding the use of positive and negative language in CSR reports, the results show Australian annual report CSR sections contained 24% less positive terms and 33% less negative terms while Australian CSR reports' main sections contained 26% less positive terms and 23% less negative terms. Australian CSR reports' opening letters were the only CSR disclosure comparable to New Zealand's, containing 4% more positive terms and the same number of negative terms. The lower levels of positive and negative terms suggest Australian CSR disclosures may contain less situational framing, a potential form of impression management, and are less bias compared to New Zealands with the difference in positive and negative words frequencies decreasing.

Extra Table 15: Australian Descriptive Statistics (Split by Disclosure)

		Activity	Optimism	Certainty	Realism	Commonality	Positive	Negative
AR CSR	Mean	49.9	52.2	50.2	43.5	52.2	6.2	0.6
	N	52	52	52	52	52	52	52
	Std. Dev.	3.0	1.8	3.1	2.6	3.5	5.3	0.8
Chair	Mean	48.6	53.7	49.6	45.9	52.1	12.7	1.8
	N	119	119	119	119	119	119	119
	Std. Dev.	5.6	2.3	3.4	2.7	9.6	5.6	1.8
CSR Open	Mean	50.8	53.1	48.9	46.0	50.9	7.7	0.9
	N	41	41	41	41	41	41	41
	Std. Dev.	4.2	2.3	2.6	3.2	3.0	4.2	1.1
CSR Main	Mean	50.2	50.9	50.2	41.8	51.8	3.4	1.0
	N	47	47	47	47	47	47	47
	Std. Dev.	4.5	2.0	2.9	3.1	2.1	1.8	1.2
Disc	Mean	49.2	50.0	53.3	43.4	52.9	3.0	0.4
	N	152	152	152	152	152	152	152
	Std. Dev.	2.2	1.2	4.3	2.3	3.1	2.8	0.7
Notes	Mean	48.3	49.4	54.2	43.6	53.6	2.9	1.4
	N	158	158	158	158	158	158	158
	Std. Dev.	4.9	1.5	4.1	2.7	3.5	3.6	1.6
Range		2.5	4.3	5.3	4.2	2.7	9.8	1.4

Focusing on the annual report, Australian chairman letters contained on average 17% more positive terms than New Zealand letters yet, at the same time, had 18% less negative terms suggesting a net increase in the emphasis of positive language. Likewise, while Australian discussion sections contained 21% less positive terms (than New Zealand's) they also contained 50% less negative terms. Interestingly, analysis of the Australian notes sections reveals a 21% increase on use of positive terms with a 56% increase in negative terms. However, this could suggest that Australian companies hide the negative elements of their performance in their financial notes more than their New Zealand counterparts do.

Bi-Variate Analysis

Extra table 16 (below and on the following page) presents the bi-variate correlations for the thematic variables based on the Australian data set. Once again, the correlations found were almost identical to those discovered by the New Zealand dataset. However, there were some significant additional correlations suggested which are discussed below.

Extra Table 16: Australian Bi-variate correlation summary for dependent variables

Variable	Spearman's rho correlation	Kendall's tau correlation
Activity	**Words (-.177), Certainty (-.190), Commonality (-.115), Fut. ROE (.161), Fut. ROA (.157)** Optimism (.094), Solvency (-.093)	**Words (-.119), Certainty (-.133), Commonality (-.078), Fut. ROE (.108), Fut. ROA (.105)** Optimism (.064), Solvency (-.064)
Certainty	**Words (.491), Activity (-.190), Optimism (-.447), Realism (-.219), Commonality (.282), Positive(-.393), Negative (-.130), Flesch (-.315), Flesch Kincaid (.333), Fog (.368), Smog (.398), MV (-.149), ROA (-.114)** ROE (-.088), Fut. ROA (-.096)	**Words (.336), Activity (-.133), Optimism (-.304), Realism (-.149), Commonality (.192), Positive(-.266), Negative (-.091), Flesch (-.219), Flesch Kincaid (.229), Fog (.255), Smog (.277), MV (-.100), ROA (-.077)** ROE (-.059), Fut. ROA (-.065)
Commonality	**Words (.299), Activity (-.115), Optimism (-.187), Certainty (.282), Realism (-.242), Positive (-.252), Flesch (-.270), Flesch Kincaid (.251), Fog (.233), Smog (.269)**	**Words (.201), Activity (-.078), Optimism (-.127), Certainty (.192), Realism (-.165), Positive (-.175), Flesch (-.185), Flesch Kincaid (.170), Fog (.158), Smog (.182)**
CSR Total	**Words (-.234), Activity (.185), Optimism (.295), Certainty (-.157), Negative (-.181), Flesch Kincaid (-.141), Fog (-.163), Smog (-.214)** Realism (-.089), Positive (.101), Current (.094), ROE (.091), ROA (.089), Fut. ROA (.087)	**Words (-.157), Activity (.124), Optimism (.201), Certainty (-.105), Negative (-.124), Flesch Kincaid (-.095), Fog (-.111), Smog (-.145)** Realism (-.059), Positive (.064), Current (.062), ROE (.059), ROA (.059), Fut. ROA (.057)
Negative	**Certainty (-.130), Realism (.123), Positive (.247)** Flesch (.092)	**Certainty (-.091), Realism (.085), Positive (.177)** Flesch (.064)
Optimism	**Words(-.625), Certainty (-.447), Realism (.285), Commonality (-.187), Positive (.632), Flesch (.249), Flesch Kincaid (-.262), Fog (-.264), Smog (-.334)** Activity (.094)	**Words(-.436), Certainty (-.304), Realism (.189), Commonality (-.127), Positive (.453), Flesch (.169), Flesch Kincaid (-.177), Fog (-.178), Smog (-.227)** Activity (.064)
Realism	**Words (-.342), Optimism (.285), Certainty (-.219), Commonality (-.242), Positive (.297), Negative (.123), Flesch (.440), Flesch Kincaid (-.301), Fog (-.280), Smog (-.298)**	**Words (-.231), Optimism (.189), Certainty (-.149), Commonality (-.165), Positive (.198), Negative (.085), Flesch (.307), Flesch Kincaid (-.204), Fog (-.190), Smog (-.204)**

Positive	**Words (-.572), Optimism (.632), Certainty (-.393), Realism (.297), Commonality (-.252), Negative (.247), Flesch (.244), Flesch Kincaid (-.200), Fog (-.198), Smog (-.259)**	**Words (-.392), Optimism (.453), Certainty (-.266), Realism (.198), Commonality (-.175), Negative (.177), Flesch (.162), Flesch Kincaid (-.135), Fog (-.134), Smog (-.174)**

Variables in bold were found statistically significant at the .01 level, else significant at the .05 level

In addition to the correlations found in the New Zealand data set, Activity was found positively correlated with Optimism while additional negative correlations were found with the size of the disclosures, Certainty, Commonality and solvency. Certainty was found to have additional negative correlations with Activity and the size of the company. And finally, Optimism had an addition positive correlation with Activity Realism. Also interesting was the lack of some correlations present within the New Zealand data set. Commonalty was lacking any correlation with negative word use or the size of the firm.

Extra Appendix 1: New Zealand Mann–Whitney U Test Results

		Flesch	FleschKin	Fog	Smog	Activity	Optim.	Certainty	Realism	Commo.	Positive	Negative	CSR
CSR Open	Mann-Whit. U	789.0	800.0	827.5	1117.5	759.0	503.0	612.5	1083.0	1088.5	934.0	1276.0	499.0
	Wilcoxon W	880.0	30203.0	30230.5	30520.5	30162.0	29906.0	703.5	30486.0	1179.5	30337.0	1367.0	29902.0
	Z	-3.031	-2.985	-2.879	-1.759	-3.142	-4.130	-3.708	-1.891	-1.870	-2.467	-1.147	-4.146
	Asymp. Sig.	0.002	0.003	0.004	0.079	0.002	0.000	0.000	0.059	0.061	0.014	0.251	0.000
CSR Main	Mann-Whit. U	1556.0	1473.5	1184.5	1086.0	1086.5	1347.0	1003.0	1100.5	1277.0	1473.5	1570.5	645.0
	Wilcoxon W	30959.0	1564.5	1275.5	1177.0	30489.5	30750.0	1094.0	1191.5	1368.0	30876.5	1661.5	30048.0
	Z	-0.066	-0.384	-1.500	-1.881	-1.878	-0.872	-2.200	-1.824	-1.143	-0.384	-0.010	-3.582
	Asymp. Sig.	0.948	0.701	0.134	0.060	0.060	0.383	0.028	0.068	0.253	0.701	0.992	0.000
AR CSR	Mann-Whit. U	519.5	531.5	619.0	661.0	414.5	367.0	484.0	631.5	761.0	657.0	780.0	292.0
	Wilcoxon W	547.5	31407.5	31495.0	31537.0	31290.5	31243.0	512.0	659.5	789.0	31533.0	31656.0	31168.0
	Z	-1.814	-1.749	-1.294	-1.076	-2.357	-2.603	-1.995	-1.229	-0.556	-1.096	-0.458	-2.993
	Asymp. Sig.	0.070	0.080	0.196	0.282	0.018	0.009	0.046	0.219	0.578	0.273	0.647	0.003
Chairman Letter	Mann-Whit. U	3156.0	4454.0	4984.0	3995.0	5704.0	2854.0	3984.5	3521.5	4031.5	1680.5	4261.0	4675.5
	Wilcoxon W	20547.0	6869.0	7399.0	6410.0	8119.0	20245.0	6399.5	20912.5	6446.5	19071.5	21652.0	7090.5
	Z	-6.242	-3.753	-2.740	-4.631	-1.363	-6.809	-4.649	-5.534	-4.559	-9.052	-4.124	-3.328
	Asymp. Sig.	0.000	0.000	0.006	0.000	0.173	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Discussion	Mann-Whit. U	6213.5	6763.0	6544.5	6825.5	5980.5	6467.5	5866.0	5700.0	5450.0	5225.0	4859.0	5035.0
	Wilcoxon W	9294.5	9844.0	22297.5	9906.5	9061.5	9548.5	21619.0	8781.0	21203.0	8306.0	7940.0	20788.0
	Z	-1.273	-0.258	-0.661	-0.143	-1.700	-0.802	-1.911	-2.217	-2.677	-3.092	-3.770	-3.442
	Asymp. Sig.	0.203	0.796	0.509	0.886	0.089	0.422	0.056	0.027	0.007	0.002	0.000	0.001
Notes	Mann-Whit. U	5294.0	5657.0	6281.5	4426.0	6631.5	1825.5	3440.0	5276.5	4930.0	2742.0	6650.5	4045.5
	Wilcoxon W	8144.0	21947.0	22571.5	20716.0	9481.5	4675.5	19730.0	8126.5	21220.0	5592.0	22940.5	6895.5
	Z	-2.717	-2.038	-0.873	-4.333	-0.221	-9.176	-6.168	-2.746	-3.391	-7.469	-0.186	-5.040
	Asymp. Sig.	0.007	0.042	0.382	0.000	0.825	0.000	0.000	0.006	0.001	0.000	0.853	0.000

Extra Appendix 2: Australian Mann–Whitney U Test Results

		Flesch	FleschKin	Fog	Smog	Activity	Optim.	Certainty	Realism	Commo.	Positive	Negative	CSR
CSR Open	Mann-Whit. U	8149.0	8003.0	6627.0	6153.0	5634.0	4940.5	5540.5	5818.5	7604.5	6666.5	9513.0	5407.5
	Wilcoxon W	147805.0	8864.0	7488.0	7014.0	145290.0	144596.5	6401.5	145474.5	8465.5	146322.5	10374.0	145063.5
	Z	-2.6400	-2.7830	-4.1400	-4.6080	-5.1180	-5.8020	-5.2100	-4.9360	-3.1750	-4.1000	-1.2960	-5.3420
	Asymp. Sig.	0.008	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.195	0.000
CSR Main	Mann-Whit. U	11666.5	9123.5	7930.0	7778.0	7105.0	12021.5	8647.0	6520.5	10324.0	10339.5	11737.5	4772.5
	Wilcoxon W	148169.5	10251.5	9058.0	8906.0	143608.0	148524.5	9775.0	7648.5	11452.0	11467.5	148240.5	141275.5
	Z	-0.5570	-2.9130	-4.0180	-4.1600	-4.7820	-0.2270	-3.3530	-5.3230	-1.8000	-1.7860	-0.4920	-6.9420
	Asymp. Sig.	0.578	0.004	0.000	0.000	0.000	0.820	0.001	0.000	0.072	0.074	0.623	0.000
AR CSR	Mann-Whit. U	7413.5	10874.0	12777.0	13246.0	10569.5	8370.5	9976.5	11397.0	12723.0	10655.5	10094.5	4159.0
	Wilcoxon W	8791.5	144777.0	146680.0	147149.0	144472.5	142273.5	11354.5	12775.0	146626.0	144558.5	11472.5	138062.0
	Z	-5.3400	-2.2730	-0.5890	-0.1730	-2.5420	-4.4880	-3.0670	-1.8100	-0.6360	-2.4660	-2.9690	-8.2150
	Asymp. Sig.	0.000	0.023	0.556	0.862	0.011	0.000	0.002	0.070	0.525	0.014	0.003	0.000
Chairman Letter	Mann-Whit. U	11071.0	15645.0	17921.5	15801.5	25579.0	6078.5	14387.0	12807.0	17824.5	3469.5	17922.5	23059.0
	Wilcoxon W	112546.0	22785.0	25061.5	22941.5	32719.0	107553.5	21527.0	114282.0	24964.5	104944.5	119397.5	30199.0
	Z	-9.8560	-6.9800	-5.5520	-6.8820	-0.7500	-12.9770	-7.7670	-8.7580	-5.6120	-14.6130	-5.5630	-2.3300
	Asymp. Sig.	0.000	0.000	0.000	0.000	0.453	0.000	0.000	0.000	0.000	0.000	0.000	0.020
Discussion	Mann-Whit. U	30849.0	31126.5	27915.5	29297.0	28041.5	19818.5	21425.5	24392.0	28350.5	18350.5	18612.5	30132.0
	Wilcoxon W	42477.0	42754.5	115068.5	116450.0	39669.5	31446.5	108578.5	36020.0	115503.5	29978.5	30240.5	117285.0
	Z	-0.4860	-0.3260	-2.1770	-1.3810	-2.1040	-6.8430	-5.9170	-4.2070	-1.9260	-7.6890	-7.5550	-0.8990
	Asymp. Sig.	0.627	0.744	0.029	0.167	0.035	0.000	0.000	0.000	0.054	0.000	0.000	0.369
Notes	Mann-Whit. U	20361.0	17377.0	19523.0	14926.5	24091.0	12445.5	17978.5	28587.0	22416.5	17488.5	24113.0	12431.0
	Wilcoxon W	32922.0	102043.0	104189.0	99592.5	36652.0	25006.5	102644.5	41148.0	107082.5	30049.5	108779.0	24992.0
	Z	-6.9010	-8.5950	-7.3730	-9.9910	-4.7700	-11.4010	-8.2510	-2.2100	-5.7240	-8.5300	-4.7680	-11.4090
	Asymp. Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.000